BAKERY LINES #1 & #2 (WITH OVENS) CONTROL EQUIPMENT INSTALLATION CONSTRUCTION PERMIT APPLICATION

East Balt Commissary, LLC > Chicago, Illinois

east balt

Construction Permit Application

Prepared By:

TRINITY CONSULTANTS
1S660 Midwest Road
Suite 250
Oakbrook Terrace, IL 60181
(630) 495-1470

October 2013

Project 131401.0127

Trinity Consultants

Environmental solutions delivered uncommonly well

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1. EXECUTIVE SUMMARY

East Balt Commissary, LLC (East Balt) is submitting this construction permit application to request approval to construct one (1) Catalytic Oxidizer to control Bakery Lines #1 and #2 (with Ovens), which are located at 1801 West 31st Place, Chicago, Illinois 60608 (East Balt Bakery). The Catalytic Oxidizer does not meet any of the categorical exemptions in Title 35 of the Illinois Administrative Code, Section 201.146 (35 IAC 201.146). Specifically, 35 IAC 201.146(jj) does not apply because the Catalytic Oxidizer is not used to control equipment that is exempt from permitting. Further, 35 IAC 201.146(hhh)(2) does not apply as this control equipment is considered part of the original Bakery Line #1 installation project and therefore the addition of air pollution control equipment is not to existing emission units. As such, a construction permit is required pursuant to 35 IAC 201.142. Additional details are provided in this application regarding the proposed new control equipment at the East Balt Bakery.

1.1. EXISTING SOURCE DESCRIPTION

The East Balt Bakery produces yeast-leavened breads, buns and muffins. Significant emission units at the source include two (2) bun lines (Bakery Line #1 and Bakery Line #2), each with an oven, identified as emission unit 01 and 02, respectively, and one (1) griddle with an oven, identified as emission unit 03. Additional insignificant activities, including, but not limited to, natural gas-fired boilers, heaters, storage silos, and a flour unloading system are also included in the current CAAPP permit. The East Balt Bakery is currently considered a major source of volatile organic material (VOM) emissions with a source-wide VOM emission limit of 200 tons per year (tpy) under the Title V operating permit program. As such, the existing facility operates under the Clean Air Act Permit Program (CAAPP) Permit No. 96030148, which was issued by the Illinois Environmental Protection Agency (IEPA) on August 30, 2004. The CAAPP permit establishes emissions based on natural gas consumption and the amount of baked bread produced. Emissions from the three emission units were originally permitted without control equipment.

The bakery lines are highly automated, where all the mixing, blending, working and dividing are interconnected by a conveyor serving the process. Bread and bread products consist of four main ingredients: flour, water, yeast and salt. Other physical properties of the product are obtained by adding ingredients such as sweeteners, shortening, enzymes, and preservatives. Flour, the main ingredient, is stored in silos and is conveyed through pipes to batch weighers, after which water, yeast, and other ingredients are added in a mixer.

After mixing, the dough is placed in large tubs and kept in a room where the temperature and humidity are closely controlled to allow the fermentation process to occur. During this process, the yeast reproduces under aerobic conditions forming carbon dioxide gas (49 percent), an almost equivalent amount of liquid ethanol (47 percent) and a small amount (about 4 percent) of other various compounds. With some recipes, additional ingredients including yeast and flour are added after fermentation. In these cases, the initial mix is called a 'sponge,' with the extra ingredients referred to as a 'spike' and the final mixed product called 'dough.'

After fermentation, the dough is placed in a mixer where the minor ingredients are added. The dough is then conveyed through a divider, rounded, dusted with flour, and placed into pans where they are conveyed into a proof box. The proof box is a well-insulated chamber, free of drafts where the time, temperature, and humidity are controlled. These conditions allow the dough to rise again by accelerating the yeast activity. A minor amount of the ethanol is liberated in the proof boxes; however, the exhausts from these chambers are minimized to preserve temperature and humidity conditions. Therefore, ethanol (VOM) emissions from the proof box are considered insignificant.

After proofing, the pans are conveyed into baking ovens. The ovens combust natural gas exclusively and have firing rates that exceeds 0.3 million British thermal units per hour (MMBtu/hr), but are less than 10 MMBtu/hr. During the baking process, the yeast suffers a thermal death, and no further gases are created. Approximately 50 percent of the liquid ethanol produced during fermentation is vaporized during the baking process. The baking process is complete when the internal temperature of the loaf reaches the boiling point of ethanol. After baking, the loaf is removed from the pan and is allowed to cool prior to packaging.

1.2. PROJECT DESCRIPTION

In response to recent performance testing conducted at the East Balt Bakery, as requested in a Section 114 letter from the United States Environmental Protection Agency (USEPA), East Balt intends to enter into a Consent Decree agreement regarding alleged violations of the Clean Air Act (CAA). East Balt recognizes that the Consent Decree will contain allegations that the East Balt Bakery should have triggered Major Source Non-Attainment New Source Review (NANSR) for VOM emissions during the installation of the new Bakery Line #1 oven in 1995 based on the VOM emission rate obtained during performance testing conducted on September 20 and 21, 2011. As required under Major Source NANSR regulations, East Balt must obtain a construction permit prior to installing a control device to limit VOM emissions from Bakery Line #1. This application requests the necessary construction permit required to satisfy this requirement.

Further, these regulations require the application to contain a demonstration that the control technology to be used to control VOM emissions meets the standard of the Lowest Achievable Emissions Rate (LAER) as well as an Alternatives Analysis to demonstrate why the facility must be located in the non-attainment area. This analysis can be found in Attachment C. It is important to note that East Balt is voluntarily installing LAER-compliant VOM emission controls on Bakery Line #2 in addition to Bakery Line #1. East Balt anticipates the addition of the control device on Bakery Line #2 will serve as a supplemental environmental project (SEP) as part of the enforcement settlement with USEPA and IEPA.

The process flow diagram for the Bakery Lines #1 and #2 (with Ovens), with proposed Catalytic Oxidizer, are illustrated in Figure 1.2.-1. The East Balt Bakery site plan and layout are displayed in Figure 1.2-2 and Figure 1.2-3, respectively.

Figure 1.2-1. Proposed East Balt Bakery Flow Diagram

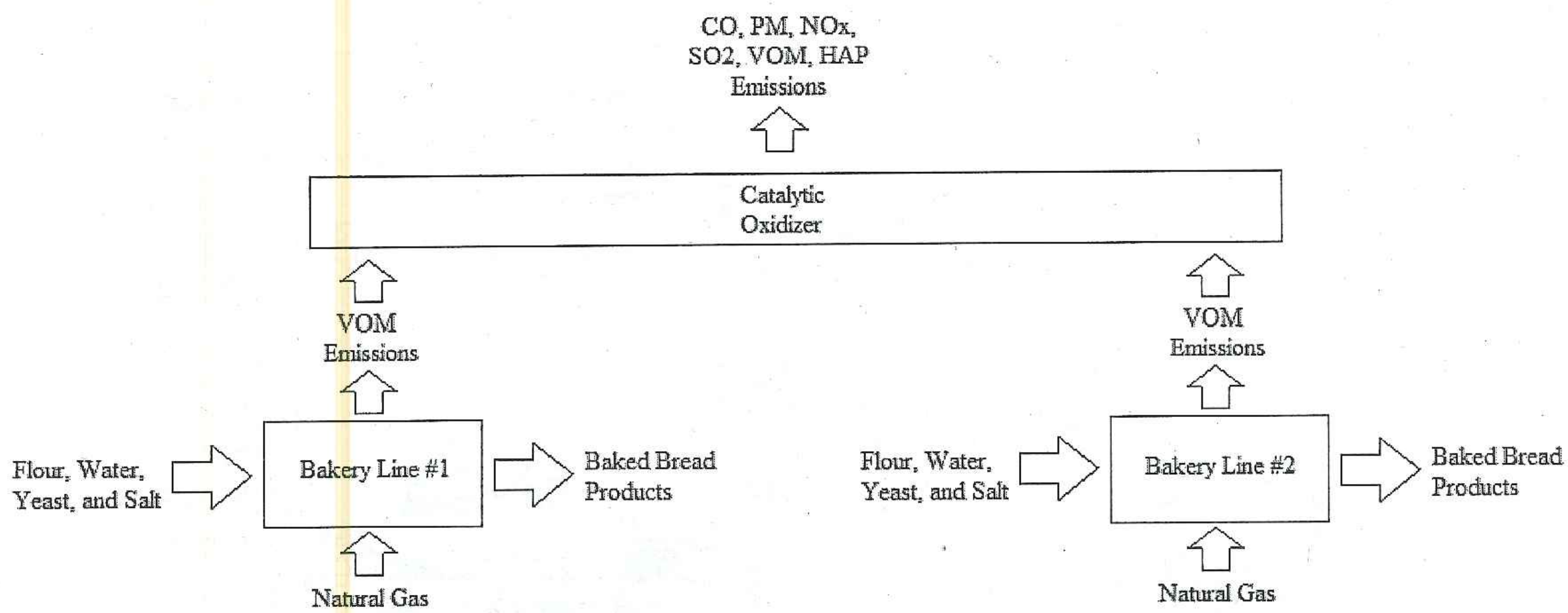


Figure 1.2-2. East Balt Bakery Site Plan

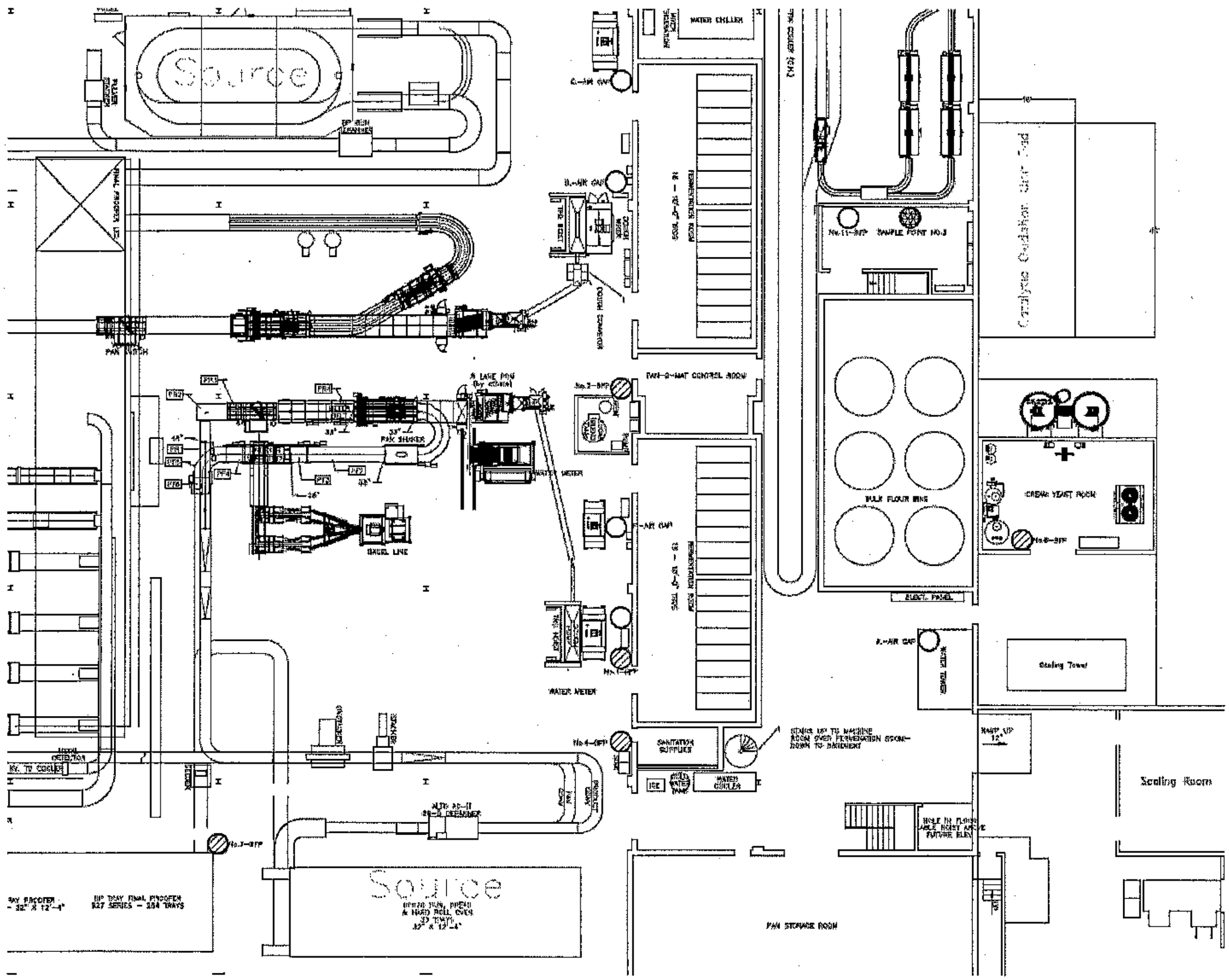
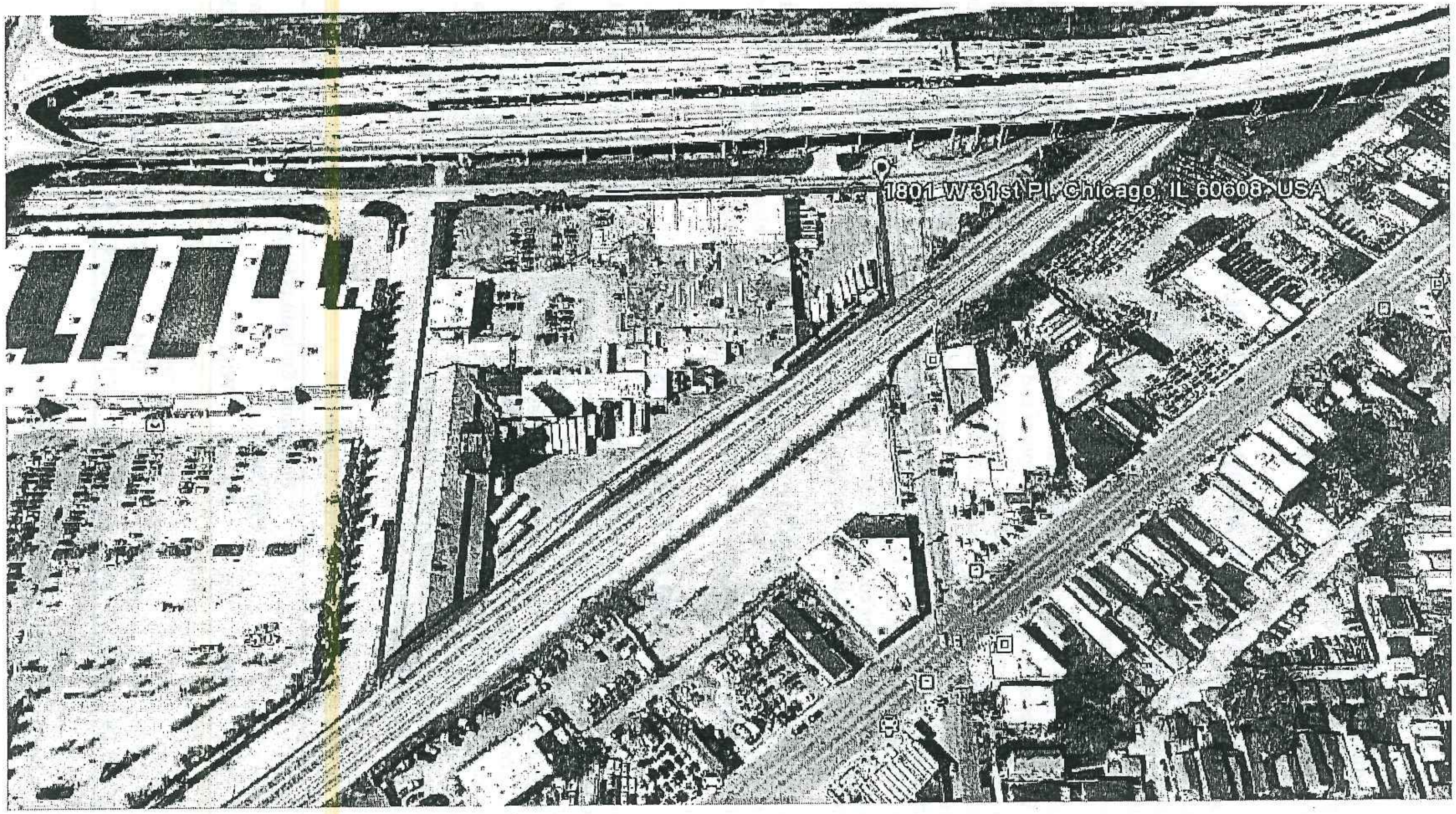


Figure 1.2-3. East Balt Bakery Aerial Map



This section documents the predicted emission rate changes associated with the proposed addition of control equipment to Bakery Lines #1 and #2 (with Ovens) and the combined total emissions for the East Balt Bakery. Detailed emissions calculations are included in Attachment A of this submittal.

2.1. EMISSION CALCULATION METHODOLOGY

The CAAPP Permit establishes emissions based on oven natural gas consumption using AP-42 natural gas emission factors and the amount of baked bread produced using Volatile Organic Material (VOM) emission factors derived from the equation provided in "Alternative Control Technology Document for Bakery Oven Emissions (USEPA 453/R-92-017, 12/1992) for yeast-raised bread baking point sources.[1]

Emission methodologies used to determine project and facility-wide emissions from Bakery Lines #1 and #2 (with Ovens) utilized stack tested VOM emission factors and applied capture and control efficiencies. Specifically, the three-run average VOM emission rates from the stack test conducted in September 2011 were multiplied by Bakery Lines #1 and #2 (with Ovens) annual maximum production of baked bread. A conservative capture efficiency of 75 percent and a manufacturer guaranteed control efficiency of 95 percent were applied to Bakery Lines #1 and #2 (with Ovens) uncontrolled emissions. Additionally, the three-run average VOM emission rate for East Balt Bakery's Griddle (with Oven), obtained from a June 2011 stack test, was used to determine VOM emissions from the Griddle in the facility-wide emissions analysis. (Note that no capture or control efficiency was applied to the emissions from the Griddle, as the Griddle exhaust is not routed to the proposed Catalytic Oxidizer).

Emission methodologies used to determine project and facility-wide natural gas emissions from Bakery Lines #1 and #2 (with Ovens) and Griddle (with Oven) are consistent with the CAAPP Permit. Similar calculation methodologies were used to calculate the emissions from the natural gas consumption by the proposed Catalytic Oxidizer.

2.2. PROJECT EMISSIONS

As stated previously, the installation of the Catalytic Oxidizer is part of the 1995 Bakery Line #1 Oven replacement. As such, Project Emissions include the emissions associated with Bakery Line #1 and the Catalytic Oxidizer only. As discussed in Section 2.1, the natural gas emissions from Bakery Lines #1 (with Oven) were calculated consistent with the methodologies outlined in East Balt Bakery's CAAPP permit. Further, the annual baked bread throughput remained the same. However, a revised VOM emission factor was employed to determine project emissions from baking bread. Further, a capture efficiency and control efficiency were applied to the uncontrolled emissions from Bakery Line #1 to determine the fugitive VOM emissions and controlled VOM emissions. Additionally, natural gas emissions were calculated emissions associated with the project are the emissions associated with adding the Catalytic Oxidizer. A summary of the project emissions is presented in Table 2.2-1.

Table 2.2-1 Project Emissions

	Pollutants Emissions (tpy)							
Emission Unit	**NO_X**	**CO**	**SO_X**	**$PM/PM_{10}/PM_{2.5}$**	**VOM**	**CO_2e**	**Total HAP**	**Max Individual HAP (Hexane)**
Bakery Line #1 (with Oven)	2.46	0.52	0.01	0.19	5.45	2,974.49	0.05	0.04
+ Fugitive					36.32			
Catalytic Oxidizer	0.72	0.61	0.00	0.05	0.04	872.97	1.36E-02	1.36E-02
Total:	**3.19**	**1.12**	**0.02**	**0.24**	**41.81**	**3,847.46**	**0.06**	**0.06**

[1] USEPA VOM emission factors based on recommendation in AP-42 Chapter 9.9.6 Bread Baking.

Additionally, the natural gas emissions from Bakery Line #2 (with Oven) and Griddle (with Oven) were calculated consistent with the methodologies outlined in East Balt Bakery's CAAPP permit, following the applicable formulas found in AP-42. Further, the annual baked bread throughput, used to determine emissions from baking bread, remained the same. However, revised VOM emission factors were employed to determine facility-wide annual emissions from baking bread on the two lines. Further, a capture efficiency and Catalytic Oxidizer control efficiency were applied to the uncontrolled emissions from Bakery Line #2 to determine the fugitive VOM emissions and controlled VOM emissions. (Note that no capture or control efficiency was applied to emissions from Griddle, with Oven, as it will not be tied to the Catalytic Oxidizer.) Facility-wide emissions for the East Balt Bakery are presented in Table 2.2-2.

Table 2.2-2 Facility-Wide Potential Emissions

	Pollutants Emissions (tpy)							
Emission Unit	**NO_X**	**CO**	**SO_X**	**PM/PM_{10}/ $PM_{2.5}$**	**VOM**	**CO_2e**	**Total HAP**	**Max Individual HAP (Hexane)**
Bakery Line #1 (with Oven)	2.46	0.52	0.01	0.19	5.45	2,974.49	0.05	0.04
+ Fugitive					36.32			
Bakery Line #2 (with Oven)	4.91	1.03	0.03	0.37	7.04	5,922.55	0.09	0.09
+ Fugitive					46.96			
Catalytic Oxidizer	0.72	0.61	4.34E-03	0.05	0.04	872.97	1.36E-02	1.36E-02
Griddle (with Oven)	1.53	0.32	0.01	0.12	27.17	1,850.80	0.03	0.03
Total:	**9.63**	**2.48**	**0.06**	**0.73**	**122.98**	**11,620.80**	**0.18**	**0.17**

As seen above, facility-wide VOM emissions are above major source thresholds. As such, East Balt Bakery maintains its major source status and will continue to operate under Illinois' CAAPP.

This section includes a discussion of potentially applicable state and federal air quality regulations for the East Balt Bakery.

3.1. FEDERAL AIR REGULATIONS

3.1.1. Prevention of Significant Deterioration (PSD)

The East Balt Bakery is located in Cook County, which is designated as "in attainment" for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), and particulate matter smaller than 10 microns (PM_{10}) per 40 CFR 81.314. The East Balt Bakery is currently not a major source of NO_x, PM_{10}, SO_2, CO emissions, or greenhouse gas (GHG) emissions. Furthermore, as seen from Table 2.1-1 the project emissions are less than the PSD major source threshold of 250 tpy for NO_x, PM_{10}, SO_2, and CO (note that the East Balt Bakery is not on the "List of 28") and less than 100,000 tpy for GHGs. Therefore, the proposed project does not trigger PSD review.

3.1.2. Non-Attainment New Source Review (NANSR)

As previously stated, the East Balt Bakery is located in Cook County, which is part of the Chicago area marginal 8-hour ozone non-attainment area and the Chicago area non-attainment area for particulate matter smaller than 2.5 microns ($PM_{2.5}$). The East Balt Bakery is a major source of VOM emissions and a minor source of NO_x, $PM_{2.5}$ and SO_2 emissions. As discussed in Section 1.2, East Balt intends to enter into a Consent Decree that is expected to allege that the East Balt Bakery should have triggered Major Source Non-Attainment New Source Review (NANSR) for VOM emissions during the installation of the new Bakery Line #1 oven in 1995. This was determined based on the VOM emission rate obtained during the recent performance testing. A project emissions analysis is required to determine whether the proposed project results in an increase of these pollutants that is "significant", thereby requiring a full NA NSR permitting process. As shown in Table 2.1-1 of this application, the total project emissions increases associated with the 1995 installation of Bakery Line #1 oven and the proposed Catalytic Oxidizer on Bakery Lines #1 and #2 exceed the NSR significant emission rates of 40 tpy for VOM. (Note that NSR significant emission rates of 100 tpy for NO_x, 100 tpy for $PM_{2.5}$ and 100 tpy for SO_2 were not exceeded.) Therefore, this project is a major modification for the purposes of NA NSR.

3.1.3. New Source Performance Standards (NSPS)

The NSPS rules, which are located in 40 CFR Part 60, require new, modified, or reconstructed sources to control emissions to the level achievable by the best-demonstrated technology as specified in the applicable provisions. The following is an evaluation of potentially applicable NSPS regulations.

3.1.3.1. 40 CFR Part 60 Subpart Db, New Source Performance Standards (NSPS) for Industrial-Commercial-Institutional Steam Generating Units and 40 CFR Part 60 Subpart Dc, NSPS for Small Industrial-Commercial-Institutional Steam Generating Units

NSPS Subpart Db applies to steam generating units with a maximum design heat input capacity greater than 100 MMBtu/hr. Similarly, NSPS Subpart Dc applies to steam generating units with a maximum design heat input capacity between 10 MMBtu/hr and 100 MMBtu/hr (inclusive). Bakery Lines #1 and #2 Ovens do not produce steam and are therefore not subject to NSPS Subparts Db or Dc. Further, Bakery Line #1 Oven has a design heat input capacity less than 10 MMBtu/hr.

3.1.4. National Emission Standards for Hazardous Air Pollutants (NESHAP)

The NESHAP rules, which are located in 40 CFR Part 61 and 63, require HAP emitters to control emissions to the level achievable by the best available control technology as specified in the applicable provisions. The source-wide potential individual and combination HAP emissions will be below major source thresholds, as seen in Table 2.2-2.[2] Therefore, the East Balt Bakery is an area source of HAPs. The following is an evaluation of potentially applicable NESHAP regulations.

3.1.4.1. 40 CFR Part 63 Subpart JJJJJJ, National Emission Standards for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers Area Sources

The East Balt Bakery is not a major source of HAPs and thus the Bakery Lines #1 and #2 Ovens are potentially subject to 40 CFR 63 Subpart JJJJJJ, National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers located at Area Sources. Per 40 CFR 63 Subpart JJJJJJ, the Ovens meet the definition of process heaters as they are designed to transfer heat indirectly to the process material, instead of generating steam like a boiler. The Ovens on Bakery Lines #1 and #2 are therefore not considered boilers and are not subject to 40 CFR 63 Subpart JJJJJJ.

3.2. STATE AIR REGULATIONS

3.2.1. State Permit Requirements

As stated previously, the new Catalytic Oxidizer does not meet any categorical construction permitting exemptions included in 35 IAC 201.146. As such, a construction permit is required pursuant to 35 IAC 201.142. The completed construction permit application forms are included in Attachment A.

As addressed earlier, the East Balt Bakery is a major source and will submit the necessary operating permit application within one (1) year of construction of the new Catalytic Oxidizer, to incorporate the control technology.

3.2.2. 35 IAC Part 212 - Particulate Matter Standards

3.2.2.1. 35 IAC 212 Subpart B - Visible Emissions Limitations

All emission units at the East Balt Bakery, including the Bakery Lines #1 and #2 (with Ovens) and associated Catalytic Oxidizer, are subject to the requirement from 35 IAC 212.123 that no emission unit may emit smoke or other particulate matter with opacity greater than 30 percent into the atmosphere. However, short term emissions may have an opacity between 30 and 60 percent as long as the time at the elevated opacity is no more than an aggregate 8 minutes in any 60 minute period, occurring no more than three (3) times in any 24-hour period, subject to restrictions on the number of emission units emitting higher opacity emissions in any 60 minute period.

As seen in the Section 2.1, minimal particulate matter or visible emissions are expected from Bakery Lines #1 and #2 (with Ovens), and the associated Catalytic Oxidizer. The only possible sources of particulate or visible emissions are the batch weighers and mixers where dry ingredients are added on Bakery Lines #1 and #2 (with Ovens) and the combustion of natural gas at the Catalytic Oxidizer. Note that Bakery Lines #1 and #2, including batch weighers and mixers, are located indoors. Visible emissions are not expected, given the nature of these operations. Further, based on its size, the Catalytic Oxidizer's exhaust will comply with the opacity requirements of 35 IAC 212.123.

3.2.2.2. 35 IAC 212 Subpart E - PM Emissions from Fuel Combustion Emission Units

Subpart E provides particulate matter emission limits for various fuel combustion emission units. Based on the definitions in 35 IAC 211.5190 and 35 IAC 211.2470, the ovens associated with Bakery Lines #1 and #2 are potentially

[2] Major source thresholds for Individual HAP and Combination HAP emissions are 10 tons per year and 25 tons per year, respectively.

subject to these provisions. However, this Subpart addresses only fuel combustion emission units that are fired with solid fuel or liquid fuel. Because the ovens associated with Bakery Lines #1 and #2 are natural gas-fired sources, each is exempt from the requirements of Subpart E.

3.2.2.3. 35 IAC 212 Subpart K - Fugitive Particulate Matter

All emission units at the East Balt Bakery, including the Bakery Lines #1 and #2 (with Ovens) and associated Catalytic Oxidizer, are subject to the requirement from 35 IAC 212.301 that prohibits fugitive particulate matter beyond the property line except during periods at which the wind speed exceeds 40.2 kilometers per hour (25 miles per hour), as provided in 35 IAC 212.314.[3] As noted above, the project to install the Catalytic Oxidizer involves primarily VOM emission sources. The only potential sources of fugitive particulate matter are the batch weighers and mixers, when dry ingredients are added Note that dry raw materials are added inside a building, the dry material is added to a liquid, and the dry material is generally course/granular in nature. As such, East Balt Bakery will be able to comply with the fugitive particulate matter prohibition.

Subpart K also contains provisions related to fugitive particulate matter in certain geographic areas within Illinois. This rule requires special handling of roadways within the facility, and preparation and submittal of a written operating program. The East Balt Bakery is located in Cook County, and this is one of the subject counties identified in 35 IAC 212.302. As such, East Balt Bakery is subject to maintaining and following a site-specific Operating Program. East Balt Bakery's Operating Program contains the minimum requirements outlined in 35 IAC 212.310, in addition to the requirements outlined in 35 IAC 212.304 through 35 IAC 212.308, as applicable.

Specifically, 35 IAC 212.304 requires that all storage piles with uncontrolled emissions of fugitive particulate matter in excess of 50 tons per year are covered, sprayed with a surfactant solution or water, or treated by an equivalent method. As seen in Table 2.2-2, Bakery Lines #1 and #2 (with Ovens), and the associated Catalytic Oxidizer, are not expected to emit particulate matter. As such, 35 IAC 212.304 does not apply. Further, 35 IAC 212.305 requires that all conveyor loading operations to aforementioned storage piles must utilize spray systems, telescopic chutes, stone ladders, or other equivalent methods pursuant to 35 IAC 212.305. Because the East Balt Bakery does not have storage piles subject to 35 IAC 212.304, 35 IAC 212.305 does not apply.

35 IAC 212.306 requires that all normal traffic pattern roads and parking facilities which are located on manufacturing property shall be paved or treated with water, oils or chemical dust suppressants. Further, the regulation requires all paved areas to be cleaned on a regular basis and all areas treated with water, oils or chemical dust suppressants to be applied on a regular basis, in accordance with East Balt's Operating Program.

In addition, 35 IAC 212.308 provisions require the conveyor transfer points, conveyors and storage bin operations of Bakery Lines #1 and #2 to be sprayed with water or a surfactant solution, utilize choke-feeding or be treated by an equivalent method in accordance with an operating program. Note that East Balt Bakery's Operating Program does not include details on the material collected by pollution control equipment pursuant to 35 IAC 212.307 since the proposed control equipment employed at the East Balt Bakery is not a baghouse. As such, the no material is collected which would require unloading or transporting. Note that the provisions of 35 IAC 212.3014 through 35 IAC 212.310 are not required during periods at which the wind speed exceeds 40.2 kilometers per hour (25 miles per hour), pursuant to 35 IAC 212.314.[4] East Balt Bakery amends and resubmits said Operating Program, as necessary, to maintain a current program pursuant to 35 IAC 212.312.

---

[3] Determination of wind speed shall be by a one-hour average or hourly recorded value at the nearest official station of the U.S. Weather Bureau or by wind speed instruments operated on the site. In cases where the duration of operations subject to this rule is less than one hour, wind speed may be averaged over the duration of the operations on the basis of on-site wind speed instrument measurements.

[4] Determination of wind speed shall be by a one-hour average or hourly recorded value at the nearest official station of the U.S. Weather Bureau or by wind speed instruments operated on the site. In cases where the duration of operations subject to this rule is less than one hour, wind speed may be averaged over the duration of the operations on the basis of on-site wind speed instrument measurements.

Subpart K also contains additional emission limitations for emission units in certain areas, specifically the areas defined in 35 IAC 212.324(a)(1)(A) – (C). The area defined by 35 IAC 212.324(a)(1)(A) is the McCook vicinity in Cook County, bound by lines from Universal Transmercator (UTM) coordinate 428000 meters East (mE), 4631000 meters North (mN), east to 435000 mE, 4631000 mN, south to 435000 mE, 4623000 mN, west to 428000 mE, 4623000 mN, north to 428000 mE, 4631000 mN. The area defined by 35 IAC 212.324(a)(1)(B) is the Lake Calumet vicinity in Cook County, bound by lines from UTM coordinate 445000mE, 4622180mN, east to 456265mE, 4622180mN, south to 456265E, 4609020N, west to 445000mE, 4609020mN, north to 445000mE, 4622180mN. The area defined by 35 IAC 212.324(a)(1)(C) is the Granite City vicinity in Madison County, bound by lines from UTM coordinate 744000mE, 4290000mN, east to 753000mE, 4290000mN, south to 753000mE, 4283000mN, west to 744000mE, 4283000mN, north to 744000mE, 4290000mN. The East Balt Bakery is located at UTM coordinate 444322mE and 4631874mN, and is therefore not located within any of the three defined areas or subject to the limits in Subpart K.

3.2.2.4. 35 IAC 212 Subpart L - PM Emissions from Process Emission Units

All process emission units at the East Balt Bakery are potentially subject to the requirements of 35 IAC 212.321, which establishes an allowable hourly PM emission rate based on the raw material processing rate of the equipment. The Bakery Lines #1 and #2 (with Ovens), and associated Catalytic Oxidizer, are considered process emission units. Note that the ovens associated with Bakery Lines #1 and #2 are not considered process emission units, but rather fuel combustion emission units, based on the definitions in 35 IAC 211.5190 and 35 IAC 211.2470. The Bakery Lines #1 and #2, and associated Catalytic Oxidizer, process approximately 3.28 tons/hour, 2.63 tons/hour, and of raw materials (based on expected batch size and batch cycle time). Using the equation found in 35 IAC 212.321(b), the allowable PM emission rate is 4.79 lb/hr and 4.26 lb/hr for Bakery Lines #1 and #2, respectively. Given the nature of the dry material addition operations (as described above), PM emissions from Bakery Lines #1 and #2 (with Ovens), and the associated Catalytic Oxidizer, are negligible and will comply with this limit.

3.2.2.5. 35 IAC 212 Subpart N - Food Manufacturing

Subpart N of 35 IAC 212 limits PM and PM_{10} emissions from food manufacturing facilities, and thus are potentially applicable to the operations at the East Balt Bakery. Specifically, 35 IAC 212.361 limits PM emissions from corn wet milling processes, 35 IAC 212.362(b)(1) – (4) limits PM_{10} emissions from food manufacturing facilities located in the area defined in 35 IAC 212.324(a)(1)(A) and 35 IAC 212.361(b)(5) limits PM_{10} emissions from a tea manufacturing facility in Granite City. As stated previous, the East Balt Bakery produces yeast leavened products such as breads, buns, and other miscellaneous bakery products and is therefore not subject to the limits in 35 IAC 212.361 or 35 IAC 212.361(b)(5). Further, the East Balt Bakery is located at UTM coordinate 444322mE and 4631874mN, and is therefore not located within the area defined by 35 IAC 212.324(a)(1)(A) or subject to the limits in 35 IAC 212.362(b)(1) – (4).

3.2.3. 35 IAC Part 214 - Sulfur Dioxide Standards

3.2.3.1. 35 IAC 214 Subparts B, C and D - Fuel Combustion Emission Sources

Subparts B, C and D of 35 IAC 214 limit SO_2 emissions from fuel combustion emission sources, and thus are potentially applicable to each of the ovens associated with Bakery Lines #1 and #2. However, these Subparts address only fuel combustion emission units that are fired with solid fuel or liquid fuel. Because the ovens associated with Bakery Lines #1 and #2 are natural gas fired sources, each is exempt from these SO_2 emission limits.

3.2.3.2. 35 IAC 214 Subpart K - Process Emission Sources

Subpart K of 35 IAC 214 includes a general provision (35 IAC 214.301) limiting SO_2 emissions to 2,000 ppm from process emission sources. The ovens associated with Bakery Lines #1 and #2 may emit minimal amounts of SO_2, but are fuel combustion emission units and thus are not subject to this requirement. Furthermore, Bakery Lines #1 and #2 are not be using any sulfur-containing raw materials and thus no process-related SO_2 emissions are expected from the Catalytic Oxidizer. Note that the Catalytic Oxidizer will combust minimal amounts of sulfur contained in the natural gas fuel. Since natural gas is inherently low in sulfur, the Catalytic Oxidizer will comply with 35 IAC 214.301.

3.2.4. 35 IAC Part 216 - Carbon Monoxide Standards

3.2.4.1. 35 IAC 216 Subpart B - Fuel Combustion Emission Sources

Fuel combustion emission sources throughout Illinois are subject to the general CO emission standard found in 35 IAC 216.121. This rule limits CO emissions from any fuel combustion unit rated more than 10 MMBtu/hr to not more than 200 ppm CO (corrected to 50 percent excess air). The oven associated with Bakery Line #1 is rated less than 10 MMBtu/hr, and thus are not subject to this rule. However, the oven associated with Bakery Line #1 is rated at 11.2 MMBtu/hr and is therefore subject to this rule. Bakery Line #1 oven will comply with 35 IAC 216.121 by ensuring proper combustion is achieved.

3.2.5. 35 IAC Part 217 - Nitrogen Oxide Standards

3.2.5.1. 35 IAC 217 Subparts C and F - Fuel Combustion Emission Sources

Subpart C of 35 IAC 217 limits NOx emissions from existing fuel combustion emission units in the Chicago area that are rated at 250 MMBtu/hr or greater. The ovens associated with Bakery Lines #1 and #2 are rated less than 10 MMBtu/hr. As such, the ovens are not subject to Subpart C.

Additionally, Subpart F limits NOx emissions from process heaters that meet the criteria identified in 35 IAC 217.150. 35 IAC 217.150 specifies that the requirements apply at facilities in the Chicago area that have the potential to emit at least 100 tpy of NOx emissions and where the individual process heater has the potential to emit at least 15 tons/year of NOx (and 5 tons of NOx per summer ozone season). The current CAAPP permit for the East Balt Bakery indicates that the site is not a major source of NOx emissions, although the individual emissions from each oven associated with Bakery Lines #1 and #2 are greater than 15 tons/year. This status remains accurate as seen in Table 2.2-2. As such, the ovens associated with Bakery Lines #1 and #2 are not subject to the NOx limitations of Subpart F.

3.2.6. 35 IAC Part 218 - Volatile Organic Matter Standards

3.2.6.1. 35 IAC 218 Subpart C - Organic Emissions from Miscellaneous Equipment

The provisions in 35 IAC 218.142 limit the volume of organic liquid leaks from pumps and compressors if the liquid has a vapor pressure of 2.5 psia or greater at 70 °F. Bakery Lines #1 and #2 processes, discussed in detail in Section 1.1, do not involve volatile organic liquids. As such, 35 IAC 218.142 does not apply to the East Balt Bakery.

3.2.6.2. 35 IAC 218 Subpart E - Solvent Cleaning

In January 2012, IEPA added regulations in 35 IAC 218.187 addressing industrial solvent cleaning operations. Per 35 IAC 218.187(a)(1), the rule applies to cleaning operations that use organic materials that emit, in the absence of air pollution control equipment, more than 500 lbs per month of VOM (facility-wide, from all such cleaning operations). The cleaning operations considered by the rule include equipment cleaning, line cleaning, and tank cleaning. Given the low contamination risk between baked bread products, East Balt does not perform solvent cleaning on Bakery Lines #1 and #2 equipment. As such, the East Balt Bakery is not subject to this rule.

3.2.6.3. 35 IAC 218 Subpart G - Use of Organic Material

The provisions of 35 IAC 218 Subpart G state that no emission unit can emit more than 8 lbs/hr of organic emissions to the atmosphere unless the emissions are controlled per 35 IAC 218.302. As noted previously, all emissions from Bakery Lines #1 and #2 will vent to the proposed Catalytic Oxidizer. As such, VOM emissions from Bakery Lines #1 and #2 will not exceed 8 lb/hr.

3.2.6.4. 35 IAC 218 Subpart V - Batch Operations

The provisions of 35 IAC 218 Subpart V apply to process vents associated with batch operations at sources with several specifically listed four-digit standard industrial classification (SIC) codes.[5] The current CAAPP permit for the East Balt Bakery indicates an SIC code of 2051 is most applicable to the site. This is not one of the listed SIC codes in 35 IAC 218.500(a)(1), although the East Balt Bakery operations will be batch operations. Therefore, Subpart V control requirements in 35 IAC 218.501 will not apply to the East Balt Bakery operations per 35 IAC 218.500(a)(1).

3.2.6.5. 35 IAC 218 Subpart TT - Other Emission Units

35 IAC Part 218, Subpart TT includes general emission limitations for other emission units not covered by another specific Illinois control requirement in Part 218. To be subject to this rule, organic emissions from equipment at the facility that is unregulated by various other Part 218 subparts must exceed the thresholds described in 218.980(a)(1) or (b)(1). East Balt meets the maximum theoretical emission threshold in 218.980(a)(1). Therefore, emission units at the facility may be subject to Subpart TT.

Pursuant to 218.980(a)(2), if the emission threshold in 218.980(a)(1) is met, then Subpart TT applies to "VOM emission units which are not included within any of the categories specified in Subparts B, E, F, H, Q, R, S, T, V, X, Y, Z, AA, BB, PP, QQ, or RR" of Part 218. As noted previously, Bakery Lines #1 and #2 (with Ovens) and associated Catalytic Oxidizer at the East Balt Bakery are not subject to any other Part 218 Subpart. As such, the provisions of Subpart TT apply. However, 35 IAC 980(f) states that the control requirements in Subpart TT shall not apply to bakeries. As such, the East Balt Bakery is not subject to Subpart TT.

---

[5] 35 IAC 218.500(a)(1) identifies SIC codes 2821, 2833, 2834, 2861, 2865, 2869, and 2879, as defined in the 1987 edition of the Federal Standard Industrial Classification Manual.

ATTACHMENT A

CAAPP Forms

199-CAAPP – Construction Permit Application for a Proposed Project at a CAAPP Source

197-CAAPP – Fee Determination for Construction Permit Application

220-Process Emission Unit Data and Information

260-CAAPP – Air Pollution Control Equipment Data and Information

260B-CAAPP – Supplemental Form Air Pollution Control Equipment Afterburner (260B)

Illinois Environmental Protection Agency
Division Of Air Pollution Control – Permit Section
P.O. Box 19506
Springfield, Illinois 62794-9506

Construction Permit Application for a Proposed Project at a CAAPP Source	For Illinois EPA use only
	ID No.:
	Appl. No.:
	Date Rec'd:
	Chk No./Amt:

This form is to be used to supply general information to obtain a construction permit for a proposed project involving a Clean Air Act Permit Program (CAAPP) source, including construction of a new CAAPP source. Detailed information about the project must also be included in a construction permit application, as addressed in the "General Instructions For Permit Applications," Form APC-201.

Proposed Project

1. Working Name of Proposed Project:
Bakery Lines #1 and #2 (with Ovens) Control Equipment Installation

2. Is the project occurring at a source that already has a permit from the Bureau of Air (BOA)?
☐ No ☒ Yes If Yes, provide BOA ID Number: 0 3 1 6 0 0 F Y B

3. Does this application request a revision to an existing construction permit issued by the BOA?
☒ No ☐ Yes If Yes, provide Permit Number: __ __ __ __ __ __ __ __

4. Brief Description of Proposed Project:
Installation of control equipment on Bakery Lines #1 and #2 (with Ovens).

Source Information

1. Source name:* East Balt Commissary, Inc.

2. Source street address:* 1801 West 31st Place

3. City: Chicago	4. County: Cook	5. Zip code:* 60608

ONLY COMPLETE THE FOLLOWING FOR A SOURCE WITHOUT AN ID NUMBER.

6. Is the source located within city limits? ☒ Yes ☐ No
If no, provide Township Name:

7. Description of source and product(s) produced: Produces breads, buns and miscellaneous bakery products.	8. Primary Classification Code of source: SIC: 2 0 5 1 or NAICS: 3 1 1 8 1 2
9. Latitude (DD:MM:SS.SSSS): 41:50:12.47 N	10. Longitude (DD:MM:SS.SSSS): 87:40:14.10 W

* Is information different than previous information? ☐ Yes ☒ No
If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Identification of Permit Applicant

1. Who is the applicant? ☐ Owner ☒ Operator	2. All correspondence to: (check one) ☐ Source ☐ Owner ☒ Operator
3. Applicant's FEIN: 36-2663053	4. Attention name and/or title for written correspondence: Mitch Haley, Plant Manager

This Agency is authorized to require and you must disclose this information under 415 ILCS 5/39. Failure to do so could result in the application being denied and penalties under 415 ILCS 5 et seq. It is not necessary to use this form in providing this information. This form has been approved by the forms management center.

Owner Information*		
1. Name: East Balt Commissary, Inc.		
2. Address: 1801 West 31st Place		
3. City: Chicago	4. State: IL	5. Zip code: 60608

* Is this information idifferent than previous information? ☐ Yes ☒ No
If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Operator Information (if different from owner)*		
1. Name		
2. Address:		
3. City:	4. State:	5. Zip code:

* Is this information different than previous information? ☐ Yes ☐ No
If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Technical Contacts for Application	
1. Preferred technical contact: (check one) ☐ Applicant's contact ☒ Consultant	
2. Applicant's technical contact person for application: Mitch Haley	
3. Contact person's telephone number(s) (773) 797-9316	4. Contact person's e-mail address: mhaley@eastbalt.com
5. Consultant for application: Richard Trzupek	
6. Consultant's telephone number(s): (630) 495-1470	7. Consultant's e-mail address: rtrzupek@trinityconsultants.com

Other Addresses for the Permit Applicant	
ONLY COMPLETE THE FOLLOWING FOR A SOURCE WITHOUT AN ID NUMBER.	
1. Address for billing Site Fees for the source: ☐ Source ☐ Other (provide below):	
2. Contact person for Site Fees:	3. Contact person's telephone number:
4. Address for Annual Emission Report for the source: ☐ Source ☐ Other (provide below):	
5. Contact person for Annual Emission Report:	6. Contact person's telephone number:

Review Of Contents of the Application	
NOTE: ANSWERING "NO" TO THESE ITEMS MAY RESULT IN THE APPLICATION BEING DEEMED INCOMPLETE	
1. Does the application include a narrative description of the proposed project?	☒ Yes ☐ No
2. Does the application clearly identify the emission units and air pollution control equipment that are part of the project?	☒ Yes ☐ No
3. Does the application include process flow diagram(s) for the project showing new and modified emission units and control equipment, along with associated existing equipment and their relationships?	☒ Yes ☐ No
4. Does the application include a general description of the source, a plot plan for the source and a site map for its location?	☒ Yes ☐ No ☐ N/A* * Material previously provided
5. Does the application include relevant technical information for the proposed project as requested on CAAPP application forms (or otherwise contain all relevant technical information)?	☒ Yes ☐ No
6. Does the application include relevant supporting data and information for the proposed project as provided on CAAPP forms?	☒ Yes ☐ No
7. Does the application identify and address all applicable emission standards for the proposed project, including: State emission standards (35 IAC Chapter I, Subtitle B); Federal New Source Performance Standards (40 CFR Part 60)?	☒ Yes ☐ No
8. Does the application address whether the project would be a major project for Prevention of Significant Deterioration, 40 CFR 52.21?	☒ Yes ☐ No ☐ N/A
9. Does the application address whether the project would be a major project for "Nonattainment New Source Review," 35 IAC Part 203?	☒ Yes ☐ No ☐ N/A
10. Does the application address whether the proposed project would potentially be subject to federal regulations for Hazardous Air Pollutants (40 CFR Part 63) and address any emissions standards for hazardous air pollutants that would be applicable?	☒ Yes ☐ No ☐ N/A* * Source not major ☐ Project not major ☐
11. Does the application include a summary of annual emission data for different pollutants for the proposed project (tons/year), including: 1) The requested permitted emissions for individual new, modified and affected existing units*, 2) The past actual emissions and change in emissions for individual modified units* and affected existing units*, and 3) Total emissions consequences of the proposed project? (* Or groups of related units)	☒ Yes ☐ No ☐ N/A * The project does not involve an increase in emissions from new or modified emission units.
12. Does the application include a summary of the current and requested potential emissions of the source (tons/year)?	☒ Yes ☐ No ☐ N/A* * Applicability of PSD, NA NSR or 40 CFR 63 to the project is not related to the source's emissions.
13. Does the application address the relationships and implications of the proposed project on the CAAPP Permit for the source?	☒ Yes ☐ No ☐ N/A* * CAAPP Permit not issued
14. If the application contains information that is considered a TRADE SECRET, has it been properly marked and claimed and all requirements to properly support the claim pursuant to 35 IAC Part 130 been met? Note: "Claimed" information will not be legally protected from disclosure to the public if it is not properly claimed or does not qualify as trade secret information.	☐ Yes ☐ No ☒ N/A* * No information in the application is claimed to be a TRADE SECRET
15. Are the correct number of copies of the application provided? (See Instructions for Permit Applications, Form 201)	☒ Yes ☐ No
16. Does the application include a completed "FEE DETERMINATION FOR CONSTRUCTION PERMIT APPLICATION," Form 197-FEE, a check in the amount indicated on this form, and any supporting material needed to explain how the fee was determined?	☒ Yes ☐ No

Signature Block

Authorized Signature:

I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the statements and information contained in this application are true, accurate and complete and that I am a responsible official for the source, as defined by Section 39.5(1) of the Environmental Protection Act.

BY:	M Haley	Plant Manager
	AUTHORIZED SIGNATURE	TITLE OF SIGNATORY
	Mitch Haley	11 20 2013
	TYPED OR PRINTED NAME OF SIGNATORY	DATE

Illinois Environmental Protection Agency

Bureau of Air • 1021 North Grand Avenue East • P.O. Box 19506 • Springfield • Illinois • 62794-9506

FEE DETERMINATION FOR CONSTRUCTION PERMIT APPLICATION

FOR AGENCY USE ONLY

ID Number: ______ Permit #: ______

☐ Complete ☐ Incomplete Date Complete: ______

Check Number: ______ Account Name: ______

This form is to be used to supply fee information that must accompany all construction permit applications. This application must include payment in full to be deemed complete. Make check or money order payable to the Illinois Environmental Protection Agency, Division of Air Pollution Control - Permit Section at the above address. Do NOT send cash. Refer to instructions (197-INST) for assistance.

Source Information

1. Source Name: East Balt Commissary, Inc.
2. Project Name: Bakery Lines #1-#2 Control Equipment Install
3. Source ID #: (if applicable) 031600FYB
4. Contact Name: Mitch Haley
5. Contact Phone #: (773) 797-9316

Fee Determination

6. The boxes below are automatically calculated.

Section 1 Subtotal $0.00 + Section 2, 3 or 4 Subtotal $500.00 = $500.00 Grand Total

Section 1: Status of Source/Purpose of Submittal

7. Your application will fall under only one of the following five categories described below. Check the box that applies. Proceed to applicable sections. For purposes of this form:
   - **Major Source** is a source that is required to obtain a CAAPP permit.
   - **Synthetic Minor Source** is a source that has taken limits on potential to emit in a permit to avoid CAAPP permit requirements (e.g.,FESOP).
   - **Non-Major Source** is a source that is not a major or synthetic minor source.

☑ Existing source without status change or with status change from synthetic minor to major source or vice versa. Proceed to Section 2.

☐ Existing non-major source that will become synthetic minor to major source. Proceed to Section 4.

☐ New major or synthetic minor source. Proceed to Section 4.

☐ New non-major source. Proceed to Section 3.

$0.00 Section 1 Subtotal

☐ AGENCY ERROR. If this is a timely request to correct an issued permit that involves only an agency error and if the request is received within the deadline for a permit appeal to the Pollution Control Board. Skip Sections 2, 3 and 4. Proceed directly to Section 5.

This agency is authorized to require and you must disclose this information under 415 ILCS 5/39. Failure to do so could result in the application being denied and penalties under 415 ILCS 5 ET SEQ. It is not necessary to use this form in providing this information. This form has been approved by the forms management center.

Section 2: Special Case Filing Fee

8. **Filing Fee**. If the application only addresses one or more of the following, check the appropriate boxes, skip Sections 3 and 4 and proceed directly to Section 5. Otherwise, proceed to Section 3 or 4 as appropriate.

☑ Addition or replacement of control devices on permitted units.

☐ Pilot projects/trial burns by a permitted unit

☐ Land remediation projects

☐ Revisions related to methodology or timing for emission testing

☐ Minor administrative-type change to a permit

$500.00

Section 3: Fees for Current or Projected Non-Major Sources

9. This application consists of a single new emission unit or no more than two modified emission units. ($500 fee)

10. This application consists of more than one new emission unit or more than two modified units. ($1,000 fee)

11. This application consists of a new source or emission unit subject to Section 39.2 of the Act (i.e., Local Siting Review); a commercial incinerator or a municipal waste, hazardous waste, or waste tire incinerator; a commercial power generator; or an emission unit designated as a complex source by agency rulemaking. ($15,000 fee)

12. A public hearing is held (see instructions). ($10,000 fee)

13. Section 3 subtotal. (lines 9 through 12 - entered on page 1) 13. $0.00

Section 4: Fees for Current or Projected Major or Synthetic Minor Sources

Application contains modified emission units only	14. For the first modified emission unit, enter $2,000.	
	15. Number of additional modified emission units = x $1,000.	
	16. Line 14 plus line 15, or $5,000, whichever is less.	16. $0.00
Application contains new and/or modified emission units	17. For the first new emission unit, enter $4,000.	
	18. Number of additional new and/or modified emission units = x $1,000.	
	19. Line 17 plus line 18, or $10,000, whichever is less.	19. $0.00
Application contains netting exercise	20. Number of individual pollutants that rely on a netting exercise or contemporaneous emissions decrease to avoid application of PSD or nonattainment area NSR = x $3,000.	20. $0.00
Additional Supplemental Fees	21. If the new source or emission unit is subject to Section 39.2 of the Act (i.e. siting); a commercial incinerator or other municipal waste, hazardous waste, or waste tire incinerator; a commercial power generator; or one or more other emission units designated as a complex source by Agency rulemaking, enter $25,000.	
	22. If the source is a new major source subject to PSD, enter $12,000.	
	23. If the project is a major modification subject to PSD, enter $6,000.	
	24. If this is a new major source subject to nonattainment area (NAA) NSR, enter $20,000.	
	25. If this is a major modification subject to NAA NSR, enter $25,000.	
	26. If the application involves a determination of MACT for a pollutant and the project is not subject to BACT or LAER for the related pollutant under PSD or NSR (e.g., VOM for organic HAP), enter $5,000 per unit for which a determination is requested or otherwise required. x $5,000.	26. $0.00
	27. If a public hearing is held (see instructions), enter $10,000.	
28. Section 4 subtotal (line 16 and lines 19 through 28) to be entered on page1		28. $0.00

Section 5: Certification

NOTE: Applications without a signed certification will be deemed incomplete.

29. I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the information contained in this fee application form is true, accurate and complete.

by: M Haley — Plant Manager

Signature — Title of Signatory

Mitch Haley — 11-20-13

Typed or Printed Name of Signatory — Date

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL -- PERMIT SECTION
P.O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

FOR APPLICANT'S USE
Revision #: ______
Date: ___ / ___ / ___
Page ______ of ______
Source Designation: ______

PROCESS EMISSION UNIT DATA AND INFORMATION	FOR AGENCY USE ONLY
	ID NUMBER:
	EMISSION POINT #:
	DATE:

SOURCE INFORMATION

1) SOURCE NAME: East Balt Commissary, Inc.	
2) DATE FORM PREPARED: September 2013	3) SOURCE ID NO. (IF KNOWN): 031600FYB

GENERAL INFORMATION

4) NAME OF EMISSION UNIT: Bakery Lines #1 and #2 (with Ovens)	
5) NAME OF PROCESS: Baking	
6) DESCRIPTION OF PROCESS: Flour, water, yeast, and salt are mixed, fermented, and baked into bread and bread products	
7) DESCRIPTION OF ITEM OR MATERIAL PRODUCED OR ACTIVITY ACCOMPLISHED: Baked bread products	
8) FLOW DIAGRAM DESIGNATION OF EMISSION UNIT: 01 (Bakery Line #1) and 02 (Bakery Line #2)	
9) MANUFACTURER OF EMISSION UNIT (IF KNOWN): Sasib Bakery North America Inc. (Bakery Line #1) and unknown (Bakery Line #2)	
10) MODEL NUMBER (IF KNOWN):	11) SERIAL NUMBER (IF KNOWN): B092590 (Bakery Line #1) and unknown (Bakery Line #2)
12) DATES OF COMMENCING CONSTRUCTION, OPERATION AND/OR MOST RECENT MODIFICATION OF THIS EMISSION UNIT (ACTUAL OR PLANNED)	a) CONSTRUCTION (MONTH/YEAR): 1978 (Bakery Line #1) and 1967 (Bakery Line #2)
	b) OPERATION (MONTH/YEAR): 1978 (Bakery Line #1) and 1967 (Bakery Line #2)
	c) LATEST MODIFICATION (MONTH/YEAR): 02/1995 (Bakery Line #1)
13) DESCRIPTION OF MODIFICATION (IF APPLICABLE): The Oven on Bakery Line #1 was replaced in February of 1995.	

FOR APPLICANT'S USE ______

14) DOES THE EMISSION UNIT HAVE MORE THAN ONE MODE OF OPERATION? IF YES, EXPLAIN AND IDENTIFY WHICH MODE IS COVERED BY THIS FORM (NOTE: A SEPARATE PROCESS EMISSION UNIT FORM 220-CAAPP MUST BE COMPLETED FOR EACH MODE):	☐ YES ☒ NO
15) PROVIDE THE NAME AND DESIGNATION OF ALL AIR POLLUTION CONTROL EQUIPMENT CONTROLLING THIS EMISSION UNIT, IF APPLICABLE (FORM 260-CAAPP AND THE APPROPRIATE 260-CAAPP ADDENDUM FORM MUST BE COMPLETED FOR EACH ITEM OF AIR POLLUTION CONTROL EQUIPMENT): TO1 (Bakery Line #1) and TO2 (Bakery Line #2).	
16) WILL EMISSIONS DURING STARTUP EXCEED EITHER THE ALLOWABLE EMISSION RATE PURSUANT TO A SPECIFIC RULE, OR THE ALLOWABLE EMISSION LIMIT AS ESTABLISHED BY AN EXISTING OR PROPOSED PERMIT CONDITION? IF YES, COMPLETE AND ATTACH FORM 203-CAAPP, "REQUEST TO OPERATE WITH EXCESS EMISSIONS DURING STARTUP OF EQUIPMENT".	☐ YES ☒ NO
17) PROVIDE ANY LIMITATIONS ON SOURCE OPERATION AFFECTING EMISSIONS OR ANY WORK PRACTICE STANDARDS (E.G., ONLY ONE UNIT IS OPERATED AT A TIME): Bakery Line #1 has a production limit of 23,464 tons of bread per year.	

OPERATING INFORMATION

18) ATTACH THE CALCULATIONS, TO THE EXTENT THEY ARE AIR EMISSION RELATED, FROM WHICH THE FOLLOWING OPERATING INFORMATION, MATERIAL USAGE INFORMATION AND FUEL USAGE DATA WERE BASED AND LABEL AS EXHIBIT 220-1. REFER TO SPECIAL NOTES OF FORM 202-CAAPP.

19a) MAXIMUM OPERATING HOURS 8,760	HOURS/DAY: 24	DAYS/WEEK: 7	WEEKS/YEAR: 52
b) TYPICAL OPERATING HOURS 8,760	HOURS/DAY: 24	DAYS/WEEK: 7	WEEKS/YEAR: 52

20) ANNUAL THROUGHPUT	DEC-FEB(%): 25	MAR-MAY(%): 25	JUN-AUG(%): 25	SEP-NOV(%): 25

MATERIAL USAGE INFORMATION

	MAXIMUM RATES		TYPICAL RATES	
21a) RAW MATERIALS	LBS/HR	TONS/YEAR	LBS/HR	TONS/YEAR
Flour, water, yeast, and salt		60,825		

21b) PRODUCTS	MAXIMUM RATES		TYPICAL RATES	
	LBS/HR	TONS/YEAR	LBS/HR	TONS/YEAR
Baked bread products		53,769		

21c) BY-PRODUCT MATERIALS	MAXIMUM RATES		TYPICAL RATES	
	LBS/HR	TONS/YEAR	LBS/HR	TONS/YEAR
None		N/A		

FUEL USAGE DATA

22a) MAXIMUM FIRING RATE (MILLION BTU/HR):	b) TYPICAL FIRING RATE (MILLION BTU/HR):	c) DESIGN CAPACITY FIRING RATE (MILLION BTU/HR):
5.625 (Bakery Line #1) 11.2 (Bakery Line #2)	5.625 (Bakery Line #1) 11.2 (Bakery Line #2)	5.625 (Bakery Line #1) 11.2 (Bakery Line #2)

d) FUEL TYPE:

☒ NATURAL GAS ☐ FUEL OIL: GRADE NUMBER ______ ☐ COAL ☐ OTHER ________________

IF MORE THAN ONE FUEL IS USED, ATTACH AN EXPLANATION AND LABEL AS EXHIBIT 220-2.

e) TYPICAL HEAT CONTENT OF FUEL (BTU/LB, BTU/GAL OR BTU/SCF):	f) TYPICAL SULFUR CONTENT (WT %., NA FOR NATURAL GAS):
1000	N/A
g) TYPICAL ASH CONTENT (WT %., NA FOR NATURAL GAS):	**h) ANNUAL FUEL USAGE (SPECIFY UNITS, E.G., SCF/YEAR, GAL/YEAR, TON/YEAR):**
N/A	49,280,000 scf/yr (Bakery Line #1) 45,430,000 scf/yr (Bakery Line #2)

23) ARE COMBUSTION EMISSIONS DUCTED TO THE SAME STACK OR CONTROL AS PROCESS UNIT EMISSIONS? ☒ YES ☐ NO

IF NO, IDENTIFY THE EXHAUST POINT FOR COMBUSTION EMISSIONS:

APPLICABLE RULES

24) PROVIDE ANY SPECIFIC EMISSION STANDARD(S) AND LIMITATION(S) SET BY RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT (E.G., VOM, IAC 218.204(j)(4), 3.5 LBS/GAL):

REGULATED AIR POLLUTANT(S)	EMISSION STANDARD(S)	REQUIREMENT(S)

25) PROVIDE ANY SPECIFIC RECORDKEEPING RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT:

REGULATED AIR POLLUTANT(S)	RECORDKEEPING RULE(S)	REQUIREMENT(S)

26) PROVIDE ANY SPECIFIC REPORTING RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT:

REGULATED AIR POLLUTANT(S)	REPORTING RULE(S)	REQUIREMENT(S)
	Refer to Application Text	

27) PROVIDE ANY SPECIFIC MONITORING RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT:

REGULATED AIR POLLUTANT(S)	MONITORING RULE(S)	REQUIREMENT(S)

28) PROVIDE ANY SPECIFIC TESTING RULES AND/OR PROCEDURES WHICH ARE APPLICABLE TO THIS EMISSION UNIT :

REGULATED AIR POLLUTANT(S)	TESTING RULE(S)	REQUIREMENT(S)

29) DOES THE EMISSION UNIT QUALIFY FOR AN EXEMPTION FROM AN OTHERWISE APPLICABLE RULE? ☐ YES ☒ NO

IF YES, THEN LIST BOTH THE RULE FROM WHICH IT IS EXEMPT AND THE RULE WHICH ALLOWS THE EXEMPTION. PROVIDE A DETAILED EXPLANATION JUSTIFYING THE EXEMPTION. INCLUDE DETAILED SUPPORTING DATA AND CALCULATIONS. ATTACH AND LABEL AS EXHIBIT 220-3, OR REFER TO OTHER ATTACHMENT(S) WHICH ADDRESS AND JUSTIFY THIS EXEMPTION. Refer to Application Text

COMPLIANCE INFORMATION

30) IS THE EMISSION UNIT IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS? ☒ YES ☐ NO

IF NO, THEN FORM 294-CAAPP "COMPLIANCE PLAN/SCHEDULE OF COMPLIANCE -- ADDENDUM FOR NON COMPLYING EMISSION UNITS" MUST BE COMPLETED AND SUBMITTED WITH THIS APPLICATION.

31) EXPLANATION OF HOW INITIAL COMPLIANCE IS TO BE, OR WAS PREVIOUSLY, DEMONSTRATED:

Projected annual production and oven design capacity firing rate were used to demonstrate compliance.

32) EXPLANATION OF HOW ONGOING COMPLIANCE WILL BE DEMONSTRATED:

The amount of product produced, the number of oven operating hours, and the amount of natural gas consumption will be used to demonstrate compliance.

TESTING, MONITORING, RECORDKEEPING AND REPORTING

33a) LIST THE PARAMETERS THAT RELATE TO AIR EMISSIONS FOR WHICH RECORDS ARE BEING MAINTAINED TO DETERMINE FEES, RULE APPLICABILITY OR COMPLIANCE. INCLUDE THE UNIT OF MEASUREMENT, THE METHOD OF MEASUREMENT, AND THE FREQUENCY OF SUCH RECORDS (E.G., HOURLY, DAILY, WEEKLY):

PARAMETER	UNIT OF MEASUREMENT	METHOD OF MEASUREMENT	FREQUENCY
Dough Production	Count	Production Records	Monthly
Fuel Usage	Therms	Natural Gas Meter	Monthly
Oven Operating Hours	Hours	Production Records	Monthly

APPLICATION PAGE ________

33b) BRIEFLY DESCRIBE THE METHOD BY WHICH RECORDS WILL BE CREATED AND MAINTAINED. FOR EACH RECORDED PARAMETER INCLUDE THE METHOD OF RECORDKEEPING, TITLE OF PERSON RESPONSIBLE FOR RECORDKEEPING, AND TITLE OF PERSON TO CONTACT FOR REVIEW OF RECORDS:

PARAMETER	METHOD OF RECORDKEEPING	TITLE OF PERSON RESPONSIBLE	TITLE OF CONTACT PERSON
Dough Production	Automated Production Records	Plant Manager	Plant Manager
Fuel Usage	Utility Bills	Plant Manager	Plant Manager
Oven Operating Hours	Automated Production Records	Plant Manager	Plant Manager

c) IS COMPLIANCE OF THE EMISSION UNIT READILY DEMONSTRATED BY REVIEW OF THE RECORDS? ☒ YES ☐ NO

IF NO, EXPLAIN:

d) ARE ALL RECORDS READILY AVAILABLE FOR INSPECTION, COPYING AND SUBMITTAL TO THE AGENCY UPON REQUEST? ☒ YES ☐ NO

IF NO, EXPLAIN:

34a) DESCRIBE ANY MONITORS OR MONITORING ACTIVITIES USED TO DETERMINE FEES, RULE APPLICABILITY OR COMPLIANCE:

The amount of product produced, the number of oven operating hours, and the amount of natural gas consumption are monitored.

b) WHAT PARAMETER(S) IS(ARE) BEING MONITORED (E.G., VOM EMISSIONS TO ATMOSPHERE)?

The amount of product produced, the number of oven operating hours, and the amount of natural gas consumption are monitored.

c) DESCRIBE THE LOCATION OF EACH MONITOR (E.G., IN STACK MONITOR 3 FEET FROM EXIT):

The amount of product produced is not determined using a monitor.
The number of oven operating hours is not determined using a monitor.
The natural gas consumption is monitored using a natural gas meter which is common to all natural gas consumption sources.

34d) IS EACH MONITOR EQUIPPED WITH A RECORDING DEVICE? ☐ YES ☒ NO

IF NO, LIST ALL MONITORS WITHOUT A RECORDING DEVICE:

The amount of product produced is not determined using a monitor.
The number of oven operating hours is not determined using a monitor.
The natural gas consumption is monitored using a natural gas meter which is equipped with a recording device.

e) IS EACH MONITOR REVIEWED FOR ACCURACY ON AT LEAST A QUARTERLY BASIS? ☐ YES ☒ NO

IF NO, EXPLAIN:

The amount of product produced is not determined using a monitor.
The number of oven operating hours is not determined using a monitor.
The natural gas consumption meter is owned by the Utility company and is therefore not reviewed by East Balt Commissary, Inc.

f) IS EACH MONITOR OPERATED AT ALL TIMES THE ASSOCIATED EMISSION UNIT IS IN OPERATION? ☐ YES ☒ NO

IF NO, EXPLAIN:

The amount of product produced is not determined using a monitor.
The number of oven operating hours is not determined using a monitor.
The natural gas consumption is monitored using a natural gas meter which is operated at all times the associated emission unit is in operation.

35) PROVIDE INFORMATION ON THE MOST RECENT TESTS, IF ANY, IN WHICH THE RESULTS ARE USED FOR PURPOSES OF THE DETERMINATION OF FEES, RULE APPLICABILITY OR COMPLIANCE. INCLUDE THE TEST DATE, TEST METHOD USED, TESTING COMPANY, OPERATING CONDITIONS EXISTING DURING THE TEST AND A SUMMARY OF RESULTS. IF ADDITIONAL SPACE IS NEEDED, ATTACH AND LABEL AS EXHIBIT 220-4:

TEST DATE	TEST METHOD	TESTING COMPANY	OPERATING CONDITIONS	SUMMARY OF RESULTS
June 7-9, 2011	USEPA RM 25A and RM18	Arrow Environmental Consulting, LLC.	Maximum Production Rates	Bakery Line #1: 15.74 lbs EtOH/ton baked product Bakery Line #2: 8.98 lbs EtOH/ton baked product
September 20-21, 2011	USEPA RM 25A and RM18	Arrow Environmental Consulting, LLC.	Maximum Production Rates	Bakery Line #1: 12.36 lbs EtOH/ton baked product Bakery Line #2: 7.76 lbs EtOH/ton baked product

36) DESCRIBE ALL REPORTING REQUIREMENTS AND PROVIDE THE TITLE AND FREQUENCY OF REPORT SUBMITTALS TO THE AGENCY:

REPORTING REQUIREMENTS	TITLE OF REPORT	FREQUENCY
All regulated pollutants	Annual Emissions Report	Annual
Compliance Status	Annual Compliance Certification	Annual

(37) EMISSION INFORMATION

☐ [1]ACTUAL EMISSION RATE
☐ [1]UNCONTROLLED EMISSION RATE

REGULATED AIR POLLUTANT		LBS PER HOUR (LBS/HR)	TONS PER YEAR (TONS/YR)	[3]OTHER TERMS	[3]OTHER TERMS	[4]DM	ALLOWABLE BY RULE EMISSION RATE: [5]RATE (UNITS)	ALLOWABLE BY RULE EMISSION RATE: APPLICABLE RULES	ALLOWABLE BY RULE EMISSION RATE: TONS PER YEAR (TONS/YR)	[2]PERMITTED EMISSION RATE: RATE (UNITS)	[2]PERMITTED EMISSION RATE: TONS PER YEAR (TONS/YR)
CARBON MONOXIDE (CO)	MAXIMUM:						( )				
	TYPICAL:						( )				
LEAD	MAXIMUM:						( )				
	TYPICAL:						( )				
NITROGEN OXIDES (NOx)	MAXIMUM:						( )				
	TYPICAL:						( )				
PARTICULATE MATTER (PART)	MAXIMUM:						( )				
	TYPICAL:						( )				
PARTICULATE MATTER <= 10 MICROMETERS (PM10)	MAXIMUM:						( )				
	TYPICAL:						( )				
SULFUR DIOXIDE (SO2)	MAXIMUM:						( )				
	TYPICAL:						( )				
VOLATILE ORGANIC MATERIAL (VOM)	MAXIMUM:	Refer to Attachment A					( )				
	TYPICAL:						( )				
OTHER, SPECIFY: ______	MAXIMUM:						( )				
	TYPICAL:						( )				
EXAMPLE: PARTICULATE MATTER	MAXIMUM:	*5.00*	*21.9*	*0.3 GR/DSCF*		*1*	*6.0 (LBS/HR)*	*212.321*	*26.28*	*5.5 LBS/HR*	*22*
	TYPICAL:	*4.00*	*14.4*	*0.24 GR/DSCF*		*4*	*5.5 (LBS/HR)*	*212.321*	*19.80*		

IMPORTANT: ATTACH CALCULATIONS, TO THE EXTENT THEY ARE AIR EMISSIONS RELATED, ON WHICH EMISSIONS WERE DETERMINED AND LABEL AS EXHIBIT 220-5.

[1]CHECK UNCONTROLLED EMISSION RATE BOX IF CONTROL EQUIPMENT IS USED, OTHERWISE CHECK AND PROVIDE THE ACTUAL EMISSION RATE TO ATMOSPHERE, INCLUDING INDOORS. SEE INSTRUCTIONS.
[2]PROVIDE THE EMISSION RATE THAT WILL BE USED AS A PERMIT SPECIAL CONDITION. THIS LIMIT WILL BE USED TO DETERMINE THE PERMIT FEE.
[3]PLEASE PROVIDE ANY OTHER EMISSION RATE WHICH IS COMMONLY USED, REQUIRED BY A SPECIFIC LIMITATION OR THAT WAS MEASURED (E.G. PPM, GR/DSCF, ETC.)
[4]DM - DETERMINATION METHOD: 1) STACK TEST, 2) MATERIAL BALANCE, 3) STANDARD EMISSION FACTOR (AP-42 OR AIRS), 4) ENGINEERING ESTIMATE, 5) SPECIAL EMISSION FACTOR (NOT AP-42 OR AIRS)
[5]RATE - ALLOWABLE EMISSION RATE SPECIFIED BY MOST STRINGENT APPLICABLE RULE.

(38) HAZARDOUS AIR POLLUTANT EMISSION INFORMATION

☐ [1]ACTUAL EMISSION RATE
☐ [1]UNCONTROLLED EMISSION RATE

NAME OF HAP EMITTED	[2]CAS NUMBER		POUNDS PER HOUR (LBS/HR)	TONS PER YEAR (TONS/YR)	[3]OTHER TERMS	[4]DM	[5]RATE OR STANDARD (ALLOWABLE BY RULE)	APPLICABLE RULE (ALLOWABLE BY RULE)
		MAXIMUM:	Refer to Attachment A					
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
EXAMPLE:		MAXIMUM:	*10.0*	*1.2*		2	*98% by wt control device*	*CFR 61*
Benzene	*71432*	TYPICAL:	*8.0*	*0.8*		2	*leak-tight trucks*	*61.302(b),(d)*

IMPORTANT: ATTACH CALCULATIONS, TO THE EXTENT THEY ARE AIR EMISSIONS RELATED, ON WHICH EMISSIONS WERE DETERMINED AND LABEL AS EXHIBIT 220-6.

[1]PROVIDE UNCONTROLLED EMISSIONS IF CONTROL EQUIPMENT IS USED. OTHERWISE, PROVIDE ACTUAL EMISSIONS TO THE ATMOSPHERE, INCLUDING INDOORS. CHECK BOX TO SPECIFY.
[2]CAS - CHEMICAL ABSTRACT SERVICE NUMBER.
[3]PLEASE PROVIDE ANY OTHER EMISSION RATE WHICH IS COMMONLY USED, REQUIRED BY A SPECIFIC LIMITATION OR THAT WAS MEASURED (E.G., PPM, GR/DSCF, ETC.).
[4]DM - DETERMINATION METHOD: 1) STACK TEST, 2) MATERIAL BALANCE, 3) STANDARD EMISSION FACTOR (AP-42 OR AIRS, 4) ENGINEERING ESTIMATE, 5) SPECIAL EMISSION FACTOR (NOT AP-42 OR AIRS).
[5]RATE - ALLOWABLE EMISSION RATE OR STANDARD SPECIFIED BY MOST STRINGENT APPLICABLE RULE.

EXHAUST POINT INFORMATION

THIS SECTION SHOULD NOT BE COMPLETED IF EMISSIONS ARE EXHAUSTED THROUGH AIR POLLUTION CONTROL EQUIPMENT.

39) FLOW DIAGRAM DESIGNATION OF EXHAUST POINT:
Catalytic Oxidizer

40) DESCRIPTION OF EXHAUST POINT (STACK, VENT, ROOF MONITOR, INDOORS, ETC.). IF THE EXHAUST POINT DISCHARGES INDOORS, DO NOT COMPLETE THE REMAINING ITEMS.
VOM Exhaust to Catalytic Oxidizer

41) DISTANCE TO NEAREST PLANT BOUNDARY FROM EXHAUST POINT DISCHARGE (FT):
Refer to 260-CAAPP for Catalytic Oxidizer

42) DISCHARGE HEIGHT ABOVE GRADE (FT):
Refer to 260-CAAPP for Catalytic Oxidizer

43) GOOD ENGINEERING PRACTICE (GEP) HEIGHT, IF KNOWN (FT):
Refer to 260-CAAPP for Catalytic Oxidizer

44) DIAMETER OF EXHAUST POINT (FT): NOTE: FOR A NON CIRCULAR EXHAUST POINT, THE DIAMETER IS 1.128 TIMES THE SQUARE ROOT OF THE AREA. Refer to 260-CAAPP for Catalytic Oxidizer

45) EXIT GAS FLOW RATE	a) MAXIMUM (ACFM): Refer to 260-CAAPP for Catalytic Oxidizer	b) TYPICAL (ACFM): Refer to 260-CAAPP for Catalytic Oxidizer
46) EXIT GAS TEMPERATURE	a) MAXIMUM (°F): Refer to 260-CAAPP for Catalytic Oxidizer	b) TYPICAL (°F): Refer to 260-CAAPP for Catalytic Oxidizer

47) DIRECTION OF EXHAUST (VERTICAL, LATERAL, DOWNWARD):
Refer to 260-CAAPP for Catalytic Oxidizer

48) LIST ALL EMISSION UNITS AND CONTROL DEVICES SERVED BY THIS EXHAUST POINT:

	NAME	FLOW DIAGRAM DESIGNATION
a)	Refer to 260-CAAPP for Catalytic Oxidizer	Refer to 260-CAAPP for Catalytic Oxidizer
b)		
c)		
d)		
e)		

THE FOLLOWING INFORMATION NEED ONLY BE SUPPLIED IF READILY AVAILABLE.

49a) LATITUDE:	b) LONGITUDE:	
50) UTM ZONE:	b) UTM VERTICAL (KM):	c) UTM HORIZONTAL (KM):

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL -- PERMIT SECTION
P.O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

FOR APPLICANT'S USE
Revision #: ______
Date: ___ / ___ / ___
Page ____ of ____
Source Designation: ______

AIR POLLUTION CONTROL EQUIPMENT DATA AND INFORMATION	FOR AGENCY USE ONLY
	ID NUMBER:
	CONTROL EQUIPMENT #:
	DATE:

THIS FORM MUST BE COMPLETED FOR EACH AIR POLLUTION CONTROL EQUIPMENT. COMPLETE AND PROVIDE THIS FORM IN ADDITION TO THE APPLICABLE ADDENDUM FORM 260-A THROUGH 260-K. A SEPARATE FORM MUST BE COMPLETED FOR EACH MODE OF OPERATION OF AIR POLLUTION CONTROL EQUIPMENT FOR WHICH A PERMIT IS BEING SOUGHT.

SOURCE INFORMATION	
1) SOURCE NAME: East Balt Commissary, Inc.	
2) DATE FORM PREPARED: September 2013	3) SOURCE ID NO. (IF KNOWN): 031600FYB

GENERAL INFORMATION	
4) NAME OF AIR POLLUTION CONTROL EQUIPMENT AND/OR CONTROL SYSTEM: Catalytic Oxidizer	
5) FLOW DIAGRAM DESIGNATION OF CONTROL EQUIPMENT AND/OR CONTROL SYSTEM: Oxidizer	
6) MANUFACTURER OF CONTROL EQUIPMENT (IF KNOWN): Catalytic Products International (CPI)	
7) MODEL NUMBER (IF KNOWN): Vector-5	8) SERIAL NUMBER (IF KNOWN): TBD
9) DATES OF COMMENCING CONSTRUCTION, OPERATION AND/OR MOST RECENT MODIFICATION OF THIS EQUIPMENT (ACTUAL OR PLANNED)	a) CONSTRUCTION (MONTH/YEAR):
	b) OPERATION (MONTH/YEAR):
	c) LATEST MODIFICATION (MONTH/YEAR):
10) BRIEFLY DESCRIBE MODIFICATION (IF APPLICABLE):	

FOR APPLICANT'S USE
______

APPLICATION PAGE ______

11) LIST ALL EMISSION UNITS AND OTHER CONTROL EQUIPMENT DUCTING EMISSIONS TO THIS CONTROL EQUIPMENT:

NAME	DESIGNATION OR CODE NUMBER
Bakery Line #1 (with Oven)	01
Bakery Line #2 (with Oven)	02

12) DOES THE CONTROL EQUIPMENT HAVE MORE THAN ONE MODE OF OPERATION? ☐ YES ☒ NO

IF YES, EXPLAIN AND IDENTIFY WHICH MODE IS COVERED BY THIS FORM (NOTE: A SEPARATE AIR POLLUTION CONTROL EQUIPMENT FORM 260-CAAPP MUST BE COMPLETED FOR EACH MODE):

13) IDENTIFY ALL ATTACHMENTS TO THIS FORM RELATED TO THIS AIR POLLUTION CONTROL EQUIPMENT(E.G., TECHNICAL DRAWINGS):

Application Text
220-CAAPP form
260b-CAAPP form

OPERATING SCHEDULE

14) IDENTIFY ANY PERIOD WHEN THE CONTROL EQUIPMENT WILL NOT BE OPERATING DUE TO SCHEDULED MAINTENANCE AND/OR REPAIRS WHEN THE FEEDING EMISSION UNIT(S) TO THIS CONTROL EQUIPMENT IS/ARE IN OPERATION:

The Oxidizer will be shutdown for Monthly Maintenance every 640 hrs to lubricate all fan and damper bearings, inspect equipment and saftey tags, and clean all sensing lines and ports.
The Oxidizer will be shutdown for Semi-Annual maintenance every 3800 hrs to check all transmitters and thermocouples, check burner spark ignitor for cracks, clean burner spark ignitor, check burner actuator operation, and leak test natural gas piping connections.
The Oxidizer will be shutdown for Annual Maintenance every 7600 hrs to internally inspect the unit, check pressure guages, replace thermocouples and UV sensor, clean/replace site glass, check bolt tightness on access doors, test fail safes, cycle all valves, check actuators' strokes, sample catalyst for activity, and check fan vibration levels.

15a) IDENTIFY ANY PERIODS DURING OPERATION OF THE FEEDING EMISSION UNIT(S) WHEN THE CONTROL EQUIPMENT IS/ARE NOT USED:

N/A

b) IS THIS CONTROL EQUIPMENT IN OPERATION AT ALL OTHER TIMES THAT THE FEEDING EMISSION UNIT(S) IS/ARE IN OPERATION? ☒ YES ☐ NO

IF NO, EXPLAIN AND PROVIDE THE DURATION OF THE CONTROL EQUIPMENT DOWNTIME:

APPLICABLE RULES

16) PROVIDE ANY SPECIFIC EMISSION STANDARD(S) AND LIMITATION(S) SET BY RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT (E.G., VOM, IAC 218.207(b)(1), 81% OVERALL & 90% CONTROL DEVICE EFF.):

REGULATED AIR POLLUTANT(S)	EMISSION STANDARD(S)	REQUIREMENT(S)

17) PROVIDE ANY SPECIFIC RECORDKEEPING RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT:

REGULATED AIR POLLUTANT(S)	RECORDKEEPING RULE(S)	REQUIREMENT(S)

18) PROVIDE ANY SPECIFIC REPORTING RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT:

REGULATED AIR POLLUTANT(S)	REPORTING RULE(S)	REQUIREMENT(S)

Refer to Application Text

19) PROVIDE ANY SPECIFIC MONITORING RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT:

REGULATED AIR POLLUTANT(S)	MONITORING RULE(S)	REQUIREMENT(S)

20) PROVIDE ANY SPECIFIC TESTING RULES AND/OR PROCEDURES WHICH ARE APPLICABLE TO THIS EMISSION UNIT :

REGULATED AIR POLLUTANT(S)	TESTING RULE(S)	REQUIREMENT(S)

COMPLIANCE INFORMATION

21) IS THE CONTROL SYSTEM IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS? ☒ YES ☐ NO

IF NO, THEN FORM 294-CAAPP "COMPLIANCE PLAN/SCHEDULE OF COMPLIANCE – ADDENDUM FOR NON COMPLYING EMISSION UNITS" MUST BE COMPLETED AND SUBMITTED WITH THIS APPLICATION.

22) EXPLANATION OF HOW INITIAL COMPLIANCE IS TO BE, OR WAS PREVIOUSLY, DEMONSTRATED:

Initial compliance was determined based on the vender guaranteed VOM destruction efficiency will be used to demonstrate compliance.

23) EXPLANATION OF HOW ONGOING COMPLIANCE WILL BE DEMONSTRATED:

Catalyst Activity will be used to demonstrate compliance.

TESTING, MONITORING, RECORDKEEPING AND REPORTING

24a) LIST THE PARAMETERS THAT RELATE TO AIR EMISSIONS FOR WHICH RECORDS ARE BEING MAINTAINED TO DETERMINE FEES, RULE APPLICABILITY OR COMPLIANCE. INCLUDE THE UNIT OF MEASUREMENT, THE METHOD OF MEASUREMENT, AND THE FREQUENCY OF SUCH RECORDS (E.G., HOURLY, DAILY, WEEKLY):

PARAMETER	UNIT OF MEASUREMENT	METHOD OF MEASUREMENT	FREQUENCY
Combustion Chamber Temperature	degrees F	Continuous Monitor	Continuous
Catalyst Inlet Temperature	degrees F	Continuous Monitor	Continuous
Catalyst Activity	Destruction Rate Efficiency (DRE)	Catalyst Activity Test	Annual

24b) BRIEFLY DESCRIBE THE METHOD BY WHICH RECORDS WILL BE CREATED AND MAINTAINED. FOR EACH RECORDED PARAMETER INCLUDE THE METHOD OF RECORDKEEPING, TITLE OF PERSON RESPONSIBLE FOR RECORDKEEPING, AND TITLE OF PERSON TO CONTACT FOR REVIEW OF RECORDS:

PARAMETER	METHOD OF RECORDKEEPING	TITLE OF PERSON RESPONSIBLE	TITLE OF CONTACT PERSON
Combustion Chamber Temperature	Electronic Data Historian	Plant Manager	Plant Manager
Catalyst Inlet Temperature	Electronic Data Historian	Plant Manager	Plant Manager
Catalyst Activity	Testing Records	Plant Manager	Plant Manager

c) IS COMPLIANCE OF THE CONTROL EQUIPMENT READILY DEMONSTRATED BY REVIEW OF THE RECORDS? ☒ YES ☐ NO

IF NO, EXPLAIN:

d) ARE ALL RECORDS READILY AVAILABLE FOR INSPECTION, COPYING AND/OR SUBMITTAL TO THE AGENCY UPON REQUEST? ☒ YES ☐ NO

IF NO, EXPLAIN:

25a) DESCRIBE ANY MONITORS OR MONITORING ACTIVITIES USED TO DETERMINE FEES, RULE APPLICABILITY OR COMPLIANCE:

Combustion Chamber Temperature, Catalyst Inlet Temperature, and Catalyst Actiivity will be monitored.

b) WHAT OPERATING PARAMETER(S) IS(ARE) BEING MONITORED (E.G., COMBUSTION CHAMBER TEMPERATURE)?

Combustion Chamber Temperature, Catalyst Inlet Temperature, and Catalyst Actiivity will be monitored.

c) DESCRIBE THE LOCATION OF EACH MONITOR (E.G., EXIT OF COMBUSTION CHAMBER):

Combustion Chamber Temperature will be monitored at the exit of the combustion chamber
Catalyst Inlet Temperature will be monitored after the catalyst tray.
Catalyst Activity is not determined using a monitor.

25d) IS EACH MONITOR EQUIPPED WITH A RECORDING DEVICE? ☐ YES ☒ NO

IF NO, LIST ALL MONITORS WITHOUT A RECORDING DEVICE:

Combustion Chamber Temperature monitor will be equipped with a recording device.
Catalyst Inlet Temperature monitor will be equipped with a recording device.
Catalyst Activity is not determined using a monitor.

e) IS EACH MONITOR REVIEWED FOR ACCURACY ON AT LEAST A QUARTERLY BASIS? ☐ YES ☒ NO

IF NO, EXPLAIN:

Combustion Chamber Temperature monitor will be reviewed for accuracy on at least a quarterly basis.
Catalyst Inlet Temperature monitor will be reviewed for accuracy on at least a quarterly basis.
Catalyst Activity is not determined using a monitor.

f) IS EACH MONITOR OPERATED AT ALL TIMES THE CONTROL EQUIPMENT IS IN OPERATION? ☐ YES ☒ NO

IF NO, EXPLAIN:

Combustion Chamber Temperature monitor will operate at all times the Oxidizer is operating.
Catalyst Inlet Temperature monitor will operate at all times the Oxidizer is operating.
Catalyst Activity is not determined using a monitor.

26) PROVIDE INFORMATION ON THE MOST RECENT TESTS, IF ANY, IN WHICH THE RESULTS ARE USED FOR PURPOSES OF THE DETERMINATION OF FEES, RULE APPLICABILITY OR COMPLIANCE. INCLUDE THE TEST DATE, TEST METHOD USED, TESTING COMPANY, OPERATING CONDITIONS EXISTING DURING THE TEST AND A SUMMARY OF RESULTS. IF ADDITIONAL SPACE IS NEEDED, ATTACH AND LABEL AS EXHIBIT 260-1:

TEST DATE	TEST METHOD	TESTING COMPANY	OPERATING CONDITIONS	SUMMARY OF RESULTS

27) DESCRIBE ALL REPORTING REQUIREMENTS AND PROVIDE THE TITLE AND FREQUENCY OF REPORT SUBMITTALS TO THE AGENCY:

REPORTING REQUIREMENTS	TITLE OF REPORT	FREQUENCY
All regulated pollutants	Annual Emissions Report	Annual
Compliance Status	Annual Compliance Certification	Annual

CAPTURE AND CONTROL

28) DESCRIBE THE CAPTURE SYSTEM USED TO CONTAIN, COLLECT AND TRANSPORT EMISSIONS TO THE CONTROL EQUIPMENT. INCLUDE ALL HOODS, DUCTS, FANS, ETC. ALSO INCLUDE THE METHOD OF CAPTURE USED AT EACH EMISSION POINT. (IF ADDITIONAL SPACE IS NEEDED, ATTACH AND LABEL AS EXHIBIT 260-2):

Oven vent exhaust will be piped to catalytic oxidizer.

29) ARE FEATURES OF THE CAPTURE SYSTEM ACCURATELY DEPICTED IN THE FLOW DIAGRAM CONTAINED IN THIS APPLICATION?

☒ YES ☐ NO

IF NO, A SKETCH SHOWING THE FEATURES OF THE CAPTURE SYSTEM SHOULD BE ATTACHED AND LABELED AS EXHIBIT 260-3:

30) PROVIDE THE ACTUAL (MINIMUM AND TYPICAL) CAPTURE SYSTEM EFFICIENCY, CONTROL EQUIPMENT DESTRUCTION/REMOVAL EFFICIENCY, AND THE OVERALL REDUCTION EFFICIENCY PROVIDED BY THE COMBINATION OF THE CAPTURE SYSTEM AND CONTROL EQUIPMENT FOR EACH REGULATED AIR POLLUTANT TO BE CONTROLLED. ATTACH THE CALCULATIONS, TO THE EXTENT THEY ARE AIR EMISSIONS RELATED, ON WHICH THESE EFFICIENCIES WERE BASED AND LABEL AS EXHIBIT 260-4:

a) CONTROL PERFORMANCE:

	REGULATED AIR POLLUTANT	CAPTURE SYSTEM EFFICIENCY (%) (MIN)	CAPTURE SYSTEM EFFICIENCY (%) (TYP)	CONTROL EQUIPMENT EFFICIENCY (%) (MIN)	CONTROL EQUIPMENT EFFICIENCY (%) (TYP)	OVERALL REDUCTION EFFICIENCY (%) (MIN)	OVERALL REDUCTION EFFICIENCY (%) (TYP)
i	VOM	75		95		71.25	
ii							
iii							

iv. EXPLAIN ANY OTHER REQUIRED LIMITS ON CONTROL EQUIPMENT PERFORMANCE SUCH AS OUTLET CONCENTRATION, COOLANT TEMPERATURE, ETC.:

b) METHOD USED TO DETERMINE EACH OF THE ABOVE EFFICIENCIES (E.G., STACK TEST, MATERIAL BALANCE, MANUFACTURER'S GUARANTEE, ETC.) AND THE DATE LAST TESTED, IF APPLICABLE:

	EFFICIENCY DETERMINATION METHOD	DATE LAST TESTED
CAPTURE:	Conservative engineering estimate	
CONTROL:	Manufacturer guarantee	
OVERALL:	Engineering calculations	

c) REQUIRED PERFORMANCE:

	REGULATED AIR POLLUTANT	CAPTURE SYSTEM EFFICIENCY (%)	CONTROL EQUIPMENT EFFICIENCY (%)	OVERALL REDUCTION EFFICIENCY (%)	APPLICABLE RULE
i	VOM		95% by weight		LAER
ii					
iii					

iv EXPLAIN ANY OTHER REQUIRED LIMITS ON CONTROL EQUIPMENT PERFORMANCE SUCH AS OUTLET CONCENTRATION, COOLANT TEMPERATURE, ETC.:

(31)EMISSION INFORMATION

REGULATED AIR POLLUTANT		[1]ACTUAL EMISSION RATE					ALLOWABLE BY RULE EMISSION RATE			[2]PERMITTED EMISSION RATE	
		LBS PER HOUR (LBS/HR)	TONS PER YEAR (TONS/YR)	[3]OTHER TERMS	[3]OTHER TERMS	[4]DM	[5]RATE (UNITS)	APPLICABLE RULES	TONS PER YEAR (TONS/YR)	RATE (UNITS)	TONS PER YEAR (TONS/YR)
CARBON MONOXIDE (CO)	MAXIMUM:						( )				
	TYPICAL:						( )				
LEAD	MAXIMUM:						( )				
	TYPICAL:						( )				
NITROGEN OXIDES (NOx)	MAXIMUM:						( )				
	TYPICAL:						( )				
PARTICULATE MATTER (PART)	MAXIMUM:						( )				
	TYPICAL:						( )				
PARTICULATE MATTER <= 10 MICROMETERS (PM10)	MAXIMUM:						( )				
	TYPICAL:						( )				
SULFUR DIOXIDE (SO2)	MAXIMUM:						( )				
	TYPICAL:						( )				
VOLATILE ORGANIC MATERIAL (VOM)	MAXIMUM:	Refer to Attachment A					( )				
	TYPICAL:						( )				
OTHER, SPECIFY:	MAXIMUM:						( )				
	TYPICAL:						( )				
EXAMPLE: PARTICULATE MATTER	MAXIMUM:	*5.00*	*21.9*	*0.3 GR/DSCF*		*1*	*6.0 (LBS/HR)*	*212.321*	*26.28*	*5.5 LBS/HR*	*22*
	TYPICAL:	*4.00*	*14.4*	*0.24 GR/DSCF*		*4*	*5.5 (LBS/HR)*	*212.321*	*19.80*		

IMPORTANT: ATTACH CALCULATIONS, TO THE EXTENT THEY ARE AIR EMISSIONS RELATED, ON WHICH EMISSIONS WERE DETERMINED AND LABEL AS EXHIBIT 260-5.

[1]PROVIDE CONTROLLED EMISSIONS (E.G., THE EMISSIONS THAT WOULD RESULT AFTER ALL CONTROL AND CAPTURE EFFICIENCIES ARE ACCOUNTED FOR).
[2]PROVIDE THE EMISSION RATE THAT WILL BE USED AS A PERMIT SPECIAL CONDITION. THIS LIMIT WILL BE USED TO DETERMINE THE PERMIT FEE.
[3]PLEASE PROVIDE ANY OTHER EMISSION RATE WHICH IS COMMONLY USED, REQUIRED BY A SPECIFIC LIMITATION OR THAT WAS MEASURED (E.G. PPM, GR/DSCF, ETC.)
[4]DM - DETERMINATION METHOD: 1) STACK TEST, 2) MATERIAL BALANCE, 3) STANDARD EMISSION FACTOR (AP-42 OR AIRS), 4) ENGINEERING ESTIMATE, 5) SPECIAL EMISSION FACTOR (NOT AP-42 OR AIRS)
[5]RATE - ALLOWABLE EMISSION RATE SPECIFIED BY MOST STRINGENT APPLICABLE RULE.

APPLICATION PAGE ______

(32) HAZARDOUS AIR POLLUTANT EMISSION INFORMATION

HAP INFORMATION		[1]ACTUAL EMISSION RATE					ALLOWABLE BY RULE	
NAME OF HAP EMITTED	[2]CAS NUMBER		POUNDS PER HOUR (LBS/HR)	TONS PER YEAR (TONS/YR)	[3]OTHER TERMS	[4]DM	[5]RATE OR STANDARD	APPLICABLE RULE
		MAXIMUM:	Refer to Attachment A					
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
EXAMPLE:		MAXIMUM:	*10.0*	*1.2*		2	*98% by wt control device*	*CFR 61*
Benzene	*71432*	TYPICAL:	*8.0*	*0.8*		2	*leak-tight trucks*	*61.302(b),(d)*

IMPORTANT: ATTACH CALCULATIONS, TO THE EXTENT THEY ARE AIR EMISSIONS RELATED, ON WHICH EMISSIONS WERE DETERMINED AND LABEL AS EXHIBIT 260-6.

[1]PROVIDE CONTROLLED EMISSIONS (E.G., THE EMISSIONS THAT WOULD RESULT AFTER ALL CONTROL AND CAPTURE EFFICIENCIES ARE ACCOUNTED FOR).
[2]CAS - CHEMICAL ABSTRACT SERVICE NUMBER.
[3]PLEASE PROVIDE ANY OTHER EMISSION RATE WHICH IS COMMONLY USED, REQUIRED BY A SPECIFIC LIMITATION OR THAT WAS MEASURED (E.G., PPM, GR/DSCF, ETC.).
[4]DM - DETERMINATION METHOD: 1) STACK TEST, 2) MATERIAL BALANCE, 3) STANDARD EMISSION FACTOR (AP-42 OR AIRS, 4) ENGINEERING ESTIMATE, 5) SPECIAL EMISSION FACTOR (NOT AP-42 OR AIRS).
[5]RATE - ALLOWABLE EMISSION RATE OR STANDARD SPECIFIED BY MOST STRINGENT APPLICABLE RULE.

EXHAUST POINT INFORMATION

33) DESCRIPTION OF EXHAUST POINT (STACK, VENT, ROOF MONITOR, INDOORS, ETC.). IF THE EXHAUST POINT DISCHARGES INDOORS, DO NOT COMPLETE THE REMAINING ITEMS. Stack		
34) DISTANCE TO NEAREST PLANT BOUNDARY FROM EXHAUST POINT DISCHARGE (FT): TBD		
35) DISCHARGE HEIGHT ABOVE GRADE (FT): 38		
36) GOOD ENGINEERING PRACTICE (GEP) HEIGHT, IF KNOWN (FT):		
37) DIAMETER OF EXHAUST POINT (FT): NOTE: FOR A NON CIRCULAR EXHAUST POINT, THE DIAMETER IS 1.128 TIMES THE SQUARE ROOT OF THE AREA. 1.83		
38) EXIT GAS FLOW RATE	a) MAXIMUM (ACFM): 8113	b) TYPICAL (ACFM): 6410
39) EXIT GAS TEMPERATURE	a) MAXIMUM (°F): 400	b) TYPICAL (°F): 385
40) DIRECTION OF EXHAUST (VERTICAL, LATERAL, DOWNWARD): Vertical		

41) LIST ALL EMISSION UNITS AND CONTROL DEVICES SERVED BY THIS EXHAUST POINT:

NAME	FLOW DIAGRAM DESIGNATION
a) Bakery Line #1 (with Oven)	01
b) Bakery Line #2 (with Oven)	02
c)	
d)	
e)	
f)	
g)	

42) WHAT PERCENTAGE OF THE CONTROL EQUIPMENT EMISSIONS ARE BEING DUCTED TO THIS EXHAUST POINT (%)?

100

43) IF THE PERCENTAGE OF THE CONTROL EQUIPMENT EMISSIONS BEING DUCTED TO THE EXHAUST POINT IS NOT 100%, THEN EXPLAIN WHERE THE REMAINING EMISSIONS ARE BEING EXHAUSTED TO:

THE FOLLOWING INFORMATION NEED ONLY BE SUPPLIED IF READILY AVAILABLE.

44a) LATITUDE:	b) LONGITUDE:	
45) UTM ZONE:	b) UTM VERTICAL (KM):	c) UTM HORIZONTAL (KM):

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL -- PERMIT SECTION
P.O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

FOR APPLICANT'S USE
Revision #: ________
Date: ___ / ___ / ___
Page ____ of ____
Source Designation: ________

SUPPLEMENTAL FORM AIR POLLUTION CONTROL EQUIPMENT AFTERBURNER (260B)	FOR AGENCY USE ONLY
	ID NUMBER:
	CONTROL EQUIPMENT#:
	DATE:

DATA AND INFORMATION

1) FLOW DIAGRAM DESIGNATION OF AFTERBURNER:

Oxidizer

2) FUEL USED IN BURNERS:

☒ NATURAL GAS ☐ FUEL OIL; NUMBER: ________

☐ OTHER, SPECIFY: ________

3) BURNERS PER AFTERBURNER: 1 AT 1.65 (MILLION BTU/HR, EACH)

4) MINIMUM COMBUSTION CHAMBER TEMPERATURE (DEGREES FAHRENHEIT): 650

5) IS A CATALYST USED?: ☒ YES ☐ NO

IF YES, CATALYST MATERIAL: Ceramic Monolith Block with Self-Cleaning Ceramic Guard Bed

6) EXPECTED FREQUENCY OF CATALYST REPLACEMENT:	7) DATE CATALYST WAS LAST REPLACED (MONTH/YEAR):
7 - 10 years	/

8) EXPLAIN DEGRADATION OR PERFORMANCE INDICATOR CRITERIA DETERMINING CATALYST REPLACEMENT:

Annual Catalyst Activity Tests will be conducted to determine the effectiveness of the catalyst at different temperatures as well as to determine whether or not there are any contaminants present.

9a) IS A HEAT EXCHANGER USED?: ☒ YES ☐ NO

IF YES, DESCRIBE:

The Oxidizer utilizes an all-welded plate-style primary heat exchanger fabricated of 304L stainless steel which prevents cross contamination of the clean oxidized gasses with the cool dirty inlet gasses. The counter flow of process exhaust gas with clean oxidized air allows relatively cool operation. Further, since the exchanger is located within the oxidizer, the exchanger is fully insulated. Additionally, there are side mounted stainless steel inlet connection with even flow air distribution veins and wide 1/2-inch plate spacing for low pressure drop.

b) HEAT EXCHANGER SURFACE AREA (FT^2):	c) AVERAGE THERMAL EFFICIENCY (%):
2200	70

10) DESCRIBE METHOD OF GAS MIXING USED:

The Oxidizer utilizes a high velocity mixing chamber at the burner, which forces flame impingement and turbulence to occur.

11) RANGE OF RETENTION TIME:	12) COMBUSTION CHAMBER LENGTH (FEET):
1 (SEC)	7

FOR APPLICANT'S USE
____

13) COMBUSTION CHAMBER CROSS SECTIONAL AREA (SQUARE FEET):

Catalyst Bed Surface Area: 20 sq.ft

14) INLET EMISSION STREAM PARAMETERS:

	MAX	TYPICAL
PRESSURE (mmHG):	3.74	
HEAT CONTENT (BTU/SCF):	0.922	
OXYGEN CONTENT (%):	17	
MOISTURE CONTENT (%):	20	

ARE HALOGENATED ORGANICS PRESENT?	☐ YES	☒ NO
ARE PARTICULATES PRESENT?	☒ YES	☐ NO
ARE METALS PRESENT?	☐ YES	☒ NO

15) AFTERBURNER OPERATING PARAMETERS:

	DURING MAXIMUM OPERATION OF FEEDING UNIT(S)	DURING TYPICAL OPERATION OF FEEDING UNIT(S)
COMBUSTION CHAMBER TEMPERATURE (DEGREES FAHRENHEIT):	1250	
INLET GAS TEMPERATURE (DEGREES FAHRENHEIT):	210-250	
INLET FLOW RATE (SCFM):	4,960	
EFFICIENCY (VOM REDUCTION):	95 (%)	(%)
EFFICIENCY (OTHER; SPECIFY CONTAMINANT: ________________):	(%)	(%)

16) FOR THERMAL AFTERBURNERS, IS THE COMBUSTION CHAMBER TEMPERATURE CONTINUOUSLY MONITORED AND RECORDED?	☐ YES	☐ NO
17) FOR CATALYTIC AFTERBURNERS, IS THE TEMPERATURE RISE ACROSS THE CATALYST BED CONTINUOUSLY MONITORED AND RECORDED?	☒ YES	☐ NO
18) IS THE VOM CONCENTRATION OF EXHAUST MONITORED AND RECORDED?	☐ YES	☒ NO
19) IS THE OPERATION OF THE AFTERBURNER DISCONTINUED DURING THE NON-OZONE SEASON (SEPTEMBER 1 TO MAY 31)?	☐ YES	☒ NO

ATTACHMENT B

Emissions Calculations

East Balt Commissary, Inc.
East Balt Bakery - Chicago, IL

Facility-Wide Emissions

Emission Unit	Pollutants Emissions (tpy)							
	NO_X	CO	SO_X	$PM/PM_{10}/PM_{2.5}$	VOM	CO_2e	Total HAP	Max Individual HAP (Hexane)
Bakery Line #1 (with Oven)	2.46	0.52	0.01	0.19	5.45	2,974.49	0.05	0.04
+ Fugitive					36.32			
Bakery Line #2 (with Oven)	4.91	1.03	0.03	0.37	7.04	5,922.55	0.09	0.09
+ Fugitive					46.96			
Catalytic Oxidizer	0.72	0.61	4.34E-03	0.05	0.04	872.97	1.36E-02	1.36E-02
Griddle (with Oven)	1.53	0.32	0.01	0.12	27.17	1,850.80	0.03	0.03
Total:	**9.63**	**2.48**	**0.06**	**0.73**	**122.98**	**11,620.80**	**0.18**	**0.17**

Project Emissions

Emission Unit	Pollutants Emissions (tpy)							
	NO_X	CO	SO_X	$PM/PM_{10}/PM_{2.5}$	VOM	CO_2e	Total HAP	Max Individual HAP (Hexane)
Bakery Line #1 (with Oven)	2.46	0.52	0.01	0.19	5.45	2,974.49	0.05	0.04
+ Fugitive					36.32			
Catalytic Oxidizer	0.72	0.61	0.00	0.05	0.04	872.97	1.36E-02	1.36E-02
Total:	**3.19**	**1.12**	**0.02**	**0.24**	**41.81**	**3,847.46**	**0.06**	**0.06**

East Balt Commissary, Inc.
East Balt Bakery - Chicago, IL
Bakery Line #1 (with Oven) Potential to Emit

Bakery Line #1 (with Oven) Inputs

Max Production Rate (tons bread/yr):	23,464
Oven Max Heat Input Capacity (MMBtu/hr):	5.625
Heat Content of Natural Gas (MMBtu/MMscf):	1000
Annual Hours of Operation (hrs):	8760

Bakery Line #1 (with Oven) Natural Gas Criteria Pollutant Emissions

Pollutants	Emission Factor (lb/MMscf)[1]	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
NO_X[2]	100	0.56	2.46
CO[2]	21	0.12	0.52
SO_X	0.6	0.00	0.01
$PM/PM_{10}/PM_{2.5}$	7.6	0.04	0.19
VOM	11	0.06	0.27

1. Emission factor obtained from AP-42 Chapter 1, Section 4, Table 1.4-2 (7/98).
2. Emission factor obtained from AP-42 Chapter 1, Section 4, Table 1.4-1 (7/98) for small boilers (<100 MMBtu/hr).

Example Calculations (NO_X emissions):

$$\frac{5.625\ \text{MMBtu}}{\text{hr}} \times \frac{100\ \text{lb}}{\text{MMscf}} \times \frac{1\ \text{MMscf}}{1000\ \text{MMBtu}} = 0.56\ \frac{\text{lb}}{\text{hr}}$$

$$\frac{0.56\ \text{lb}}{\text{hr}} \times \frac{8760\ \text{hr}}{\text{year}} \times \frac{1\ \text{lb}}{2000\ \text{ton}} = 2.46\ \frac{\text{ton}}{\text{year}}$$

East Balt Commissary, Inc.
East Balt Bakery - Chicago, IL
Bakery Line #1 (with Oven) Potential to Emit

Bakery Line #1 (with Oven) Natural Gas Greenhouse Gas Emissions

Pollutants	Emission Factor (lb/MMscf)[1]	GWP	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
CO_2	120000	1	675.00	2,956.50
CH_4	2.3	21	0.01	0.06
N_2O	2.2	310	0.01	0.05
CO_2e[2]			679.11	2,974.49

1. Emission factor obtained from AP-42 Chapter 1, Section 4, Table 1.4-2 (7/98).
2. Carbon Dioxide equivalent (CO_2e) emissions are calculated by multiplying mass emissions by each pollutant's global warming potential (GWP).

Example Calculations (CO_2 emissions):

$$\frac{5.625\ \text{MMBtu}}{\text{hr}} \times \frac{120000\ \text{lb}}{\text{MMscf}} \times \frac{1\ \text{MMscf}}{1000\ \text{MMBtu}} = 675.00\ \frac{\text{lb}}{\text{hr}}$$

$$\frac{675.00\ \text{lb}}{\text{hr}} \times \frac{8760\ \text{hr}}{\text{year}} \times \frac{1\ \text{lb}}{2000\ \text{ton}} = 2{,}956.50\ \frac{\text{ton}}{\text{year}}$$

Example Calculations (CO_2e emissions):

$$\frac{675.00\ \text{lb}\ CO_2}{\text{hr}} \times \frac{1\ \text{GWP}}{\text{lb}\ CO_2} = 675.00\ \text{lbs}\ CO_2e/\text{hr}$$

$$\frac{0.01\ \text{lb}\ CH_4}{\text{hr}} \times \frac{21\ \text{GWP}}{\text{lb}\ CH_4} = 0.27\ \text{lbs}\ CO_2e/\text{hr}$$

$$\frac{0.01\ \text{lb}\ N_2O}{\text{hr}} \times \frac{310\ \text{GWP}}{\text{lb}\ N_2O} = 3.84\ \text{lbs}\ CO_2e/\text{hr}$$

Total: 679.11 lbs CO_2e/hr

$$\frac{679.11\ \text{lb}\ CO_2e}{\text{hr}} \times \frac{8760\ \text{hr}}{\text{year}} \times \frac{1\ \text{lb}}{2000\ \text{ton}} = 2{,}974.49\ \text{tpy}$$

East Balt Commissary, Inc.
East Balt Bakery - Chicago, IL
Bakery Line #1 (with Oven) Potential to Emit

Bakery Line #1 (with Oven) Natural Gas HAP Pollutant Emissions

Pollutant	CAS	Emission Factors (lb/MMscf)[1]	Hourly Emissions (lbs/hr)	Annual Emissions (tpy)
Lead[2]	7439-92-1	5.00E-04	2.81E-06	1.23E-05
2-Methylnapthalene	91-57-6	2.40E-05	1.35E-07	5.91E-07
3-Methylchloranthrene	56-49-5	1.80E-06	1.01E-08	4.43E-08
7-12-	57-97-6	1.60E-05	9.00E-08	3.94E-07
Acenaphthene	83-32-9	1.80E-06	1.01E-08	4.43E-08
Acenaphthylene	203-96-8	1.80E-06	1.01E-08	4.43E-08
Anthracene	120-12-7	2.40E-06	1.35E-08	5.91E-08
Benz(a)anthracene	56-55-3	1.80E-06	1.01E-08	4.43E-08
Benzene	71-43-2	2.10E-03	1.18E-05	5.17E-05
Benzo(a)pyrene	50-32-8	1.20E-06	6.75E-09	2.96E-08
Benzo(b)fluoranthene	205-99-2	1.80E-06	1.01E-08	4.43E-08
Benzo(g,h,i)perylene	191-24-2	1.20E-06	6.75E-09	2.96E-08
Benzo(k)fluoranthene	205-82-3	1.80E-06	1.01E-08	4.43E-08
Chrysene	218-01-9	1.80E-06	1.01E-08	4.43E-08
Dibenzo(a,h)anthracene	53-70-3	1.20E-06	6.75E-09	2.96E-08
Dichlorobenzene	25321-22-6	1.20E-03	6.75E-06	2.96E-05
Fluoranthene	206-44-0	3.00E-06	1.69E-08	7.39E-08
Fluorene	86-73-7	2.80E-06	1.58E-08	6.90E-08
Formaldehyde	50-00-0	7.50E-02	4.22E-04	1.85E-03
Hexane	110-54-3	1.80E+00	1.01E-02	4.43E-02
Indeno(1,2,3-cd)pyrene	193-39-5	1.80E-06	1.01E-08	4.43E-08
Naphthalene	91-20-3	6.10E-04	3.43E-06	1.50E-05
Phenanathrene	85-01-8	1.70E-05	9.56E-08	4.19E-07
Pyrene	129-00-0	5.00E-06	2.81E-08	1.23E-07
Toluene	108-88-3	3.40E-03	1.91E-05	8.38E-05
Arsenic	7784-42-1	2.00E-04	1.13E-06	4.93E-06
Beryllium	7440-41-7	1.20E-05	6.75E-08	2.96E-07
Cadmium	7440-43-9	1.10E-03	6.19E-06	2.71E-05
Chromium	7440-47-3	1.40E-03	7.88E-06	3.45E-05
Cobalt	7440-48-4	8.40E-05	4.73E-07	2.07E-06
Manganese	7439-96-5	3.80E-04	2.14E-06	9.36E-06
Mercury	7439-97-6	2.60E-04	1.46E-06	6.41E-06
Nickel	7440-02-0	2.10E-03	1.18E-05	5.17E-05
Selenium	7782-49-2	2.40E-05	1.35E-07	5.91E-07
Total POM		8.52E-05	4.79E-07	2.10E-06
Total HAP		**1.89E+00**	**1.06E-02**	**4.65E-02**
Maximum Individual HAP (hexane)		**1.80E+00**	**1.01E-02**	**4.43E-02**

1. Emission factor obtained from AP-42 Chapter 1, Section 4, Table 1.4-3 and 1.4-4 (7/98).
2. Emission factor obtained from AP-42 Chapter 1, Section 4, Table 1.4-2 (7/98).

East Balt Commissary, Inc.
East Balt Bakery - Chicago, IL
Bakery Line #1 (with Oven) Potential to Emit

Example Calculations (Hexane emissions):

$$\frac{5.625\ \text{MMBtu}}{\text{hr}} \times \frac{1.80\ \text{lb}}{\text{MMscf}} \times \frac{1\ \text{MMscf}}{1000\ \text{MMBtu}} = 0.01\ \frac{\text{lb}}{\text{hr}}$$

$$\frac{0.01\ \text{lb}}{\text{hr}} \times \frac{8760\ \text{hr}}{\text{year}} \times \frac{1\ \text{lb}}{2000\ \text{ton}} = 0.04\ \frac{\text{ton}}{\text{year}}$$

East Balt Commissary, Inc.
East Balt Bakery - Chicago, IL
Bakery Line #1 (with Oven) Potential to Emit

Bakery Line #1 (with Oven) Ethanol (VOM) Baking Emissions

Pollutants	Emission Factor (lb/ton baked bread)[1]	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
VOM	12.36	33.11	145.01

1. Emission factor obtained from September 20-21, 2011 USEPA Method 25A Stack Test.

Example Calculations (Ethanol - VOM emissions):

$$\frac{23464.000 \text{ tons bread}}{\text{year}} \times \frac{12.36 \text{ lb}}{\text{ton bread}} \times \frac{1 \text{ year}}{8760 \text{ hr}} = 33.11 \frac{\text{lb}}{\text{hr}}$$

$$\frac{33.11 \text{ lb}}{\text{hr}} \times \frac{8760 \text{ hr}}{\text{year}} \times \frac{1 \text{ lb}}{2000 \text{ ton}} = 145.01 \frac{\text{ton}}{\text{year}}$$

Bakery Line #1 (with Oven) Controlled VOM Emissions

	Natural Gas Emissions		Baking Emissions	
Uncontrolled Emissions				
Hourly Emissions (lb/hr)		0.06		33.11
Annual Emissions (tpy)		0.27		145.01
Fugitive Emissions				
Capture Efficiency (%)[1]	75%		75%	
Hourly Emissions (lb/hr)		0.02		8.28
Annual Emissions (tpy)		0.07		36.25
Controlled Emissions				
Control Efficiency (%)	95%		95%	
Hourly Emissions (lb/hr)		2.32E-03		1.24
Annual Emissions (tpy)		0.01		5.44

1. Capture efficiency based on conservative Engineering Estimate
2. Control Efficiency based on Manufacturer Guarantee.

Example Calculations (Natural Gas Emission Fugitive):

$$\frac{0.062 \text{ lb}}{\text{hr}} \times (1 - 75\% \text{ capture}) = 0.02 \frac{\text{lb}}{\text{hr}}$$

$$\frac{0.02 \text{ lb}}{\text{hr}} \times \frac{8760 \text{ hr}}{\text{year}} \times \frac{1 \text{ lb}}{2000 \text{ ton}} = 0.07 \frac{\text{ton}}{\text{year}}$$

Example Calculations (Natural Gas Emission Controlled):

$$\left(\frac{0.062 \text{ lb}}{\text{hr}} - \frac{0.02 \text{ lb}}{\text{hr}}\right) \times (1 - 95\% \text{ capture}) = 2.32\text{E-}03 \frac{\text{lb}}{\text{hr}}$$

$$\frac{2.32\text{E-}03 \text{ lb}}{\text{hr}} \times \frac{8760 \text{ hr}}{\text{year}} \times \frac{1 \text{ lb}}{2000 \text{ ton}} = 0.01 \frac{\text{ton}}{\text{year}}$$

East Balt Commissary, Inc.
East Balt Bakery - Chicago, IL
Bakery Line #1 (with Oven) Potential to Emit

Bakery Line #1 (with Oven) Total Emissions

Pollutants	Uncontrolled		Controlled	
	Hourly Emissions (lb/hr)	Annual Emissions (tpy)	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
Criteria Pollutant Emissions				
NO_X[2]	0.56	2.46	0.56	2.46
CO[2]	0.12	0.52	0.12	0.52
SO_X	0.00	0.01	0.00	0.01
PM	0.04	0.19	0.04	0.19
VOM	24.88	108.96	1.24	5.45
VOM Fugitive	8.29	36.32	8.29	36.32
Greenhouse Gas Emissions				
CO_2	675.00	2,956.50	675.00	2,956.50
CH_4	0.01	0.06	0.01	0.06
N_2O	0.01	0.05	0.01	0.05
CO_2e	679.11	2,974.49	679.11	2,974.49
HAP Emissions				
Total HAP	0.01	0.05	0.01	0.05
Maximum Individual HAP (hexane)	0.01	0.04	0.01	0.04

East Balt Commissary, Inc.
East Balt Bakery - Chicago, IL
Bakery Line #2 (with Oven) Potential to Emit

Bakery Line #2 (with Oven) Inputs

Max Production Rate (tons bread/yr):	30,305
Oven Max Heat Input Capacity (MMBtu/hr):	11.2
Heat Content of Natural Gas (MMBtu/MMscf):	1000
Annual Hours of Operation (hrs):	8760

Bakery Line #2 (with Oven) Natural Gas Emissions

Pollutants	Emission Factor (lb/MMscf)[1]	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
NO_X[2]	100	1.12	4.91
CO[2]	21	0.24	1.03
SO_X	0.6	0.01	0.03
$PM/PM_{10}/PM_{2.5}$[3]	7.6	0.09	0.37
VOM	11	0.12	0.54

1. Emission factor obtained from AP-42 Chapter 1, Section 4, Table 1.4-2 (7/98).
2. Emission factor obtained from AP-42 Chapter 1, Section 4, Table 1.4-1 (7/98) for small boilers (<100 MMBtu/hr).
3. All PM (total, condensable, and filterable) is assumed to be less than 1.0 micrometer in diameter per AP-42 Chapter 1.4 (7/98), Table 1.4-2, Footnote c. Therefore, the PM emission factor provided was used to estimate PM, PM10, and PM2.5.

Example Calculations (NO_X emissions):

$$\frac{11.200\ \text{MMBtu}}{\text{hr}} \times \frac{100\ \text{lb}}{\text{MMscf}} \times \frac{1\ \text{MMscf}}{1000\ \text{MMBtu}} = 1.12\ \frac{\text{lb}}{\text{hr}}$$

$$\frac{1.12\ \text{lb}}{\text{hr}} \times \frac{8760\ \text{hr}}{\text{year}} \times \frac{1\ \text{lb}}{2000\ \text{ton}} = 4.91\ \frac{\text{ton}}{\text{year}}$$

East Balt Commissary, Inc.
East Balt Bakery - Chicago, IL
Bakery Line #2 (with Oven) Potential to Emit

Bakery Line #2 (with Oven) Natural Gas Greenhouse Gas Emissions

Pollutants	Emission Factor (lb/MMscf)[1]	GWP	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
CO_2	120000	1	1,344.00	5,886.72
CH_4	2.3	21	0.03	0.11
N_2O	2.2	310	0.02	0.11
CO_2e[2]			1,352.18	5,922.55

1. Emission factor obtained from AP-42 Chapter 1, Section 4, Table 1.4-2 (7/98).
2. Carbon Dioxide equivalent (CO_2e) emissions are calculated by multiplying mass emissions by each pollutant's global warming potential (GWP).

Example Calculations (CO_2 emissions):

$$\frac{11.200\ \text{MMBtu}}{\text{hr}} \times \frac{1E+05\ \text{lb}}{\text{MMscf}} \times \frac{1\ \text{MMscf}}{1000\ \text{MMBtu}} = 1{,}344.00\ \frac{\text{lb}}{\text{hr}}$$

$$\frac{1{,}344.00\ \text{lb}}{\text{hr}} \times \frac{8760\ \text{hr}}{\text{year}} \times \frac{1\ \text{lb}}{2000\ \text{ton}} = 5{,}886.72\ \frac{\text{ton}}{\text{year}}$$

Example Calculations (CO_2e emissions):

$$\frac{1{,}344.00\ \text{lb}\ CO_2}{\text{hr}} \times \frac{1\ \text{GWP}}{\text{lb}\ CO_2} = 1344.00\ \text{lbs}\ CO_2e/\text{hr}$$

$$\frac{0.03\ \text{lb}\ CH_4}{\text{hr}} \times \frac{21\ \text{GWP}}{\text{lb}\ CH_4} = 0.54\ \text{lbs}\ CO_2e/\text{hr}$$

$$\frac{0.02\ \text{lb}\ N_2O}{\text{hr}} \times \frac{310\ \text{GWP}}{\text{lb}\ N_2O} = 7.64\ \text{lbs}\ CO_2e/\text{hr}$$

Total: 1352.18 lbs CO_2e/hr

$$\frac{1{,}352.18\ \text{lb}\ CO_2e}{\text{hr}} \times \frac{8760\ \text{hr}}{\text{year}} \times \frac{1\ \text{lb}}{2000\ \text{ton}} = 5{,}922.55\ \text{tpy}$$

East Balt Commissary, Inc.
East Balt Bakery - Chicago, IL
Bakery Line #2 (with Oven) Potential to Emit

Bakery Line #2 (with Oven) Natural Gas HAP Pollutant Emissions

Pollutant	CAS	Emission Factors (lb/MMscf)[1]	Hourly Emissions (lbs/hr)	Annual Emissions (tpy)
Lead[2]	7439-92-1	5.00E-04	5.60E-06	2.45E-05
2-Methylnapthalene	91-57-6	2.40E-05	2.69E-07	1.18E-06
3-Methylchloranthrene	56-49-5	1.80E-06	2.02E-08	8.83E-08
7-12-	57-97-6	1.60E-05	1.79E-07	7.85E-07
Acenaphthene	83-32-9	1.80E-06	2.02E-08	8.83E-08
Acenaphthylene	203-96-8	1.80E-06	2.02E-08	8.83E-08
Anthracene	120-12-7	2.40E-06	2.69E-08	1.18E-07
Benz(a)anthracene	56-55-3	1.80E-06	2.02E-08	8.83E-08
Benzene	71-43-2	2.10E-03	2.35E-05	1.03E-04
Benzo(a)pyrene	50-32-8	1.20E-06	1.34E-08	5.89E-08
Benzo(b)fluoranthene	205-99-2	1.80E-06	2.02E-08	8.83E-08
Benzo(g,h,i)perylene	191-24-2	1.20E-06	1.34E-08	5.89E-08
Benzo(k)fluoranthene	205-82-3	1.80E-06	2.02E-08	8.83E-08
Chrysene	218-01-9	1.80E-06	2.02E-08	8.83E-08
Dibenzo(a,h)anthracene	53-70-3	1.20E-06	1.34E-08	5.89E-08
Dichlorobenzene	25321-22-6	1.20E-03	1.34E-05	5.89E-05
Fluoranthene	206-44-0	3.00E-06	3.36E-08	1.47E-07
Fluorene	86-73-7	2.80E-06	3.14E-08	1.37E-07
Formaldehyde	50-00-0	7.50E-02	8.40E-04	3.68E-03
Hexane	110-54-3	1.80E+00	2.02E-02	8.83E-02
Indeno(1,2,3-cd)pyrene	193-39-5	1.80E-06	2.02E-08	8.83E-08
Naphthalene	91-20-3	6.10E-04	6.83E-06	2.99E-05
Phenanathrene	85-01-8	1.70E-05	1.90E-07	8.34E-07
Pyrene	129-00-0	5.00E-06	5.60E-08	2.45E-07
Toluene	108-88-3	3.40E-03	3.81E-05	1.67E-04
Arsenic	7784-42-1	2.00E-04	2.24E-06	9.81E-06
Beryllium	7440-41-7	1.20E-05	1.34E-07	5.89E-07
Cadmium	7440-43-9	1.10E-03	1.23E-05	5.40E-05
Chromium	7440-47-3	1.40E-03	1.57E-05	6.87E-05
Cobalt	7440-48-4	8.40E-05	9.41E-07	4.12E-06
Manganese	7439-96-5	3.80E-04	4.26E-06	1.86E-05
Mercury	7439-97-6	2.60E-04	2.91E-06	1.28E-05
Nickel	7440-02-0	2.10E-03	2.35E-05	1.03E-04
Selenium	7782-49-2	2.40E-05	2.69E-07	1.18E-06
Total POM		8.52E-05	9.54E-07	4.18E-06
Total HAP		**1.89E+00**	**2.11E-02**	**9.26E-02**
Maximum Individual HAP (hexane)		**1.80E+00**	**2.02E-02**	**8.83E-02**

1. Emission factor obtained from AP-42 Chapter 1, Section 4, Table 1.4-3 and 1.4-4 (7/98).
2. Emission factor obtained from AP-42 Chapter 1, Section 4, Table 1.4-2 (7/98).

East Balt Commissary, Inc.
East Balt Bakery - Chicago, IL
Bakery Line #2 (with Oven) Potential to Emit

Example Calculations (Hexane emissions):

$$\frac{11.200\ \text{MMBtu}}{\text{hr}} \times \frac{1.80\ \text{lb}}{\text{MMscf}} \times \frac{1\ \text{MMscf}}{1000\ \text{MMBtu}} = 0.02\ \frac{\text{lb}}{\text{hr}}$$

$$\frac{0.02\ \text{lb}}{\text{hr}} \times \frac{8760\ \text{hr}}{\text{year}} \times \frac{1\ \text{lb}}{2000\ \text{ton}} = 0.09\ \frac{\text{ton}}{\text{year}}$$

East Balt Commissary, Inc.
East Balt Bakery - Chicago, IL
Bakery Line #2 (with Oven) Potential to Emit

Bakery Line #2 (with Oven) Ethanol (VOM) Baking Emissions

Pollutants	Emission Factor (lb/ton baked bread)[1]	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
VOM	12.36	42.76	187.28

1. Emission factor obtained from September 20-21, 2011 USEPA Method 25A Stack Test.

Example Calculations (Ethanol - VOM emissions):

$$\frac{30305.000 \text{ tons bread}}{\text{year}} \times \frac{12.36 \text{ lb}}{\text{ton bread}} \times \frac{1 \text{ year}}{8760 \text{ hr}} = 42.76 \frac{\text{lb}}{\text{hr}}$$

$$\frac{42.76 \text{ lb}}{\text{hr}} \times \frac{8760 \text{ hr}}{\text{year}} \times \frac{1 \text{ lb}}{2000 \text{ ton}} = 187.28 \frac{\text{ton}}{\text{year}}$$

Bakery Line #2 (with Oven) Controlled VOM Emissions

	Natural Gas Emissions	Baking Emissions
Uncontrolled Emissions		
Hourly Emissions (lb/hr)	0.12	42.76
Annual Emissions (tpy)	0.54	187.28
Fugitive Emissions		
Capture Efficiency (%)[1]	75%	75%
Hourly Emissions (lb/hr)	0.03	10.69
Annual Emissions (tpy)	0.13	46.82
Controlled Emissions		
Control Efficiency (%)	95%	95%
Hourly Emissions (lb/hr)	4.62E-03	1.60
Annual Emissions (tpy)	0.02	7.02

1. Capture efficiency based on conservative Engineering Estimate
2. Control Efficiency based on Manufacturer Guarantee.

Example Calculations (Natural Gas Emission Fugitive):

$$\frac{0.123 \text{ lb}}{\text{hr}} \times (1 - 75\% \text{ capture}) = 0.03 \frac{\text{lb}}{\text{hr}}$$

$$\frac{0.03 \text{ lb}}{\text{hr}} \times \frac{8760 \text{ hr}}{\text{year}} \times \frac{1 \text{ lb}}{2000 \text{ ton}} = 0.13 \frac{\text{ton}}{\text{year}}$$

Example Calculations (Natural Gas Emission Controlled):

$$\left(\frac{0.123 \text{ lb}}{\text{hr}} - \frac{0.03 \text{ lb}}{\text{hr}}\right) \times (1 - 95\% \text{ capture}) = 4.62\text{E-03} \frac{\text{lb}}{\text{hr}}$$

$$\frac{4.62\text{E-03 lb}}{\text{hr}} \times \frac{8760 \text{ hr}}{\text{year}} \times \frac{1 \text{ lb}}{2000 \text{ ton}} = 0.02 \frac{\text{ton}}{\text{year}}$$

East Balt Commissary, Inc.
East Balt Bakery - Chicago, IL
Bakery Line #2 (with Oven) Potential to Emit

Bakery Line #2 (with Oven) Total Emissions

Pollutants	Uncontrolled		Controlled	
	Hourly Emissions (lb/hr)	**Annual Emissions (tpy)**	**Hourly Emissions (lb/hr)**	**Annual Emissions (tpy)**
Criteria Pollutant Emissions				
NO_x [2]	1.12	4.91	1.12	4.91
CO [2]	0.24	1.03	0.24	1.03
SO_x	0.01	0.03	0.01	0.03
PM	0.09	0.37	0.09	0.37
VOM	32.16	140.87	1.61	7.04
VOM Fugitive	10.72	46.96	10.72	46.96
Greenhouse Gas Emissions				
CO_2	1,344.00	5,886.72	1,344.00	5,886.72
CH_4	0.03	0.11	0.03	0.11
N_2O	0.02	0.11	0.02	0.11
CO_2e	1,352.18	5,922.55	1,352.18	5,922.55
HAP Emissions				
Total HAP	2.11E-02	9.26E-02	0.02	0.09
Maximum Individual HAP (hexane)	2.02E-02	8.83E-02	0.02	0.09

East Balt Commissary, Inc.
East Balt Bakery - Chicago, IL
Thermal Oxidizer Potential to Emit

Catalytic Oxidizer Inputs

Maximum Heat Input Rating:	1.7	MMBtu/hr
	0.002	MMscf/hr

1. Natural Gas consumption converted to therms/yr using conversion factors 1000 MMBtu/MMscf (assumed lowest heat content of natural gas received at East Balt).

Catalytic Oxidizer Criteria Pollutant Emissions

Pollutant	Emission Factors (lb/MMscf)[1]	Hourly Emissions	Annual Emissions (tpy)
NO_X	100	0.17	0.72
CO	84	0.14	0.61
SO_2[3]	0.60	9.90E-04	4.34E-03
$PM/PM_{10}/PM_{2.5}$[2]	7.6	0.01	0.05
VOM[3]	5.5	0.01	0.04

1. Emission factors from AP-42 Chapter 1.4 (7/98), Table 1.4-1.
2. All PM (total, condensable, and filterable) is assumed to be less than 1.0 micrometer in diameter per AP-42 Chapter 1.4 (7/98), Table 1.4-2, Footnote c. Therefore, the PM emission factor provided was used to estimate PM, PM_{10}, and $PM_{2.5}$.
3. Emission factor obtained from AP-42 Chapter 1, Section 4, Table 1.4-2 (7/98).

Example Emission Calculation (SO_2)

$$\frac{0.002\ \text{MMscf}}{\text{hr}} \times \frac{0.60\ \text{lb}}{\text{MMscf}} = 9.90\text{E-}04\ \text{lbs/hr}$$

$$\frac{9.90\text{E-}04\ \text{lbs}}{\text{hr}} \times \frac{8760\ \text{hrs}}{\text{year}} \times \frac{\text{ton}}{2000\ \text{lb}} = 4.34\text{E-}03\ \text{tpy}$$

Catalytic Oxidizer Greenhouse Gas Emissions

Pollutant	Emission Factors (lb/MMscf)[1]	GWP	Hourly Emissions (lbs/hr)	Annual Emissions (tpy)
CO_2	120,000	1	198.00	867.24
CH_4	2.3	21	3.80E-03	0.02
N_2O	2.4	310	3.96E-03	0.02
CO_2e[2]			199.31	872.97

1. Emission factor obtained from AP-42 Chapter 1, Section 4, Table 1.4-2 (7/98).
factors 2.2046 lb/kg and 1,028 MMBtu/MMscf (default high heat value for natural gas in 40 CFR 98).
2. Carbon Dioxide equivalent (CO_2e) emissions are calculated by multiplying mass emissions by each pollutant's global warming potential (GWP).

Example Emission Calculation (CO_2)

$$\frac{0.002\ \text{MMscf}}{\text{hr}} \times \frac{120000.00\ \text{lb}}{\text{MMscf}} = 198.00\ \text{lbs/hr}$$

$$\frac{198.00\ \text{lbs}}{\text{hr}} \times \frac{8760\ \text{hrs}}{\text{year}} \times \frac{\text{ton}}{2000\ \text{lb}} = 867.24\ \text{tpy}$$

Example Emission Calculation (CO_2e)

$$\frac{867.24\ \text{tons}\ CO_2}{\text{hr}} \times \frac{1\ \text{GWP}}{\text{lb}\ CO_2} = 867.24\ \text{tons}\ CO_2e/\text{yr}$$

$$\frac{0.02\ \text{tons}\ CH_4}{\text{hr}} \times \frac{21\ \text{GWP}}{\text{lb}\ CH_4} = 0.35\ \text{tons}\ CO_2e/\text{yr}$$

$$\frac{0.02\ \text{tons}\ N_2O}{\text{hr}} \times \frac{310\ \text{GWP}}{\text{lb}\ N_2O} = 5.38\ \text{tons}\ CO_2e/\text{yr}$$

+

Total: 872.97 tons CO_2e/yr

East Balt Commissary, Inc.
East Balt Bakery - Chicago, IL
Thermal Oxidizer Potential to Emit

Catalytic Oxidizer HAP Pollutant Emissions

Pollutant	CAS	Factors (lb/MMscf)[1]	Hourly Emissions (lbs/hr)	Annual Emissions (tpy)
Lead[2]	7439-92-1	5.00E-04	8.25E-07	3.61E-06
2-Methylnapthalene	91-57-6	2.40E-05	3.96E-08	1.73E-07
3-Methylchloranthrene	56-49-5	1.80E-06	2.97E-09	1.30E-08
7-12-Dimethylbenz(a)anthracene	57-97-6	1.60E-05	2.64E-08	1.16E-07
Acenaphthene	83-32-9	1.80E-06	2.97E-09	1.30E-08
Acenaphthylene	203-96-8	1.80E-06	2.97E-09	1.30E-08
Anthracene	120-12-7	2.40E-06	3.96E-09	1.73E-08
Benz(a)anthracene	56-55-3	1.80E-06	2.97E-09	1.30E-08
Benzene	71-43-2	2.10E-03	3.47E-06	1.52E-05
Benzo(a)pyrene	50-32-8	1.20E-06	1.98E-09	8.67E-09
Benzo(b)fluoranthene	205-99-2	1.80E-06	2.97E-09	1.30E-08
Benzo(g,h,i)perylene	191-24-2	1.20E-06	1.98E-09	8.67E-09
Benzo(k)fluoranthene	205-82-3	1.80E-06	2.97E-09	1.30E-08
Chrysene	218-01-9	1.80E-06	2.97E-09	1.30E-08
Dibenzo(a,h)anthracene	53-70-3	1.20E-06	1.98E-09	8.67E-09
Dichlorobenzene	25321-22-6	1.20E-03	1.98E-06	8.67E-06
Fluoranthene	206-44-0	3.00E-06	4.95E-09	2.17E-08
Fluorene	86-73-7	2.80E-06	4.62E-09	2.02E-08
Formaldehyde	50-00-0	7.50E-02	1.24E-04	5.42E-04
Hexane	110-54-3	1.80E+00	2.97E-03	1.30E-02
Indeno(1,2,3-cd)pyrene	193-39-5	1.80E-06	2.97E-09	1.30E-08
Naphthalene	91-20-3	6.10E-04	1.01E-06	4.41E-06
Phenanathrene	85-01-8	1.70E-05	2.81E-08	1.23E-07
Pyrene	129-00-0	5.00E-06	8.25E-09	3.61E-08
Toluene	108-88-3	3.40E-03	5.61E-06	2.46E-05
Arsenic	7784-42-1	2.00E-04	3.30E-07	1.45E-06
Beryllium	7440-41-7	1.20E-05	1.98E-08	8.67E-08
Cadmium	7440-43-9	1.10E-03	1.82E-06	7.95E-06
Chromium	7440-47-3	1.40E-03	2.31E-06	1.01E-05
Cobalt	7440-48-4	8.40E-05	1.39E-07	6.07E-07
Manganese	7439-96-5	3.80E-04	6.27E-07	2.75E-06
Mercury	7439-97-6	2.60E-04	4.29E-07	1.88E-06
Nickel	7440-02-0	2.10E-03	3.47E-06	1.52E-05
Selenium	7782-49-2	2.40E-05	3.96E-08	1.73E-07
Total POM		8.52E-05	1.41E-07	6.16E-07
Total HAP		**1.89E+00**	**3.12E-03**	**1.36E-02**
Maximum Individual HAP (hexane)		**1.80E+00**	**2.97E-03**	**1.36E-02**

1. Emission factor obtained from AP-42 Chapter 1, Section 4, Table 1.4-3 and 1.4-4 (7/98).
2. Emission factor obtained from AP-42 Chapter 1, Section 4, Table 1.4-2 (7/98).

Example Emission Calculation (2-Methylnapthalene)

0.002	MMscf	2.40E-05	lb	=	3.96E-08 lbs/hr
	min		MMscf		

3.96E-08	lb	8760	hrs		ton	=	1.73E-07 tpy
	hr		year	2000	lb		

Total Emissions

Pollutants	Uncontrolled	
	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
Criteria Pollutant Emissions		
NO_X[2]	0.17	0.72
CO[2]	0.14	0.61
SO_X	0.00	0.00
PM	0.01	0.05
VOM	0.01	0.04
Greenhouse Gas Emissions		
CO_2	198.00	867.24
CH_4	0.00	0.02
N_2O	0.00	0.02
CO_2e	199.31	872.97
HAP Emissions		
Total HAP	3.12E-03	1.36E-02
Maximum Individual HAP (hexane)	2.97E-03	1.36E-02

East Balt Commissary, Inc.
East Balt Bakery - Chicago, IL
Griddle (with Oven) Potential to Emit

Griddle (with Oven) Inputs

Max Production Rate (tons bread/yr):	12,264
Oven Max Heat Input Capacity (MMBtu/hr):	3.5
Heat Content of Natural Gas (MMBtu/MMscf):	1000
Annual Hours of Operation (hrs):	8760

Griddle (with Oven) Natural Gas Emissions

Pollutants	Emission Factor (lb/MMscf)[1]	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
NO_X[2]	100	0.35	1.53
CO[2]	21	0.07	0.32
SO_X	0.6	0.00	0.01
$PM/PM_{10}/PM_{2.5}$	7.6	0.03	0.12
VOM	11	0.04	0.17

1. Emission factor obtained from AP-42 Chapter 1, Section 4, Table 1.4-2 (7/98).
2. Emission factor obtained from AP-42 Chapter 1, Section 4, Table 1.4-1 (7/98) for small boilers (<100 MMBtu/hr).

Example Calculations (NO_X emissions):

$$\frac{3.500\ \text{MMBtu}}{\text{hr}} \times \frac{100\ \text{lb}}{\text{MMscf}} \times \frac{1\ \text{MMscf}}{1000\ \text{MMBtu}} = 0.35\ \frac{\text{lb}}{\text{hr}}$$

$$\frac{0.35\ \text{lb}}{\text{hr}} \times \frac{8760\ \text{hr}}{\text{year}} \times \frac{1\ \text{lb}}{2000\ \text{ton}} = 1.53\ \frac{\text{ton}}{\text{year}}$$

East Balt Commissary, Inc.
East Balt Bakery - Chicago, IL
Griddle (with Oven) Potential to Emit

Griddle (with Oven) Natural Gas Greenhouse Gas Emissions

Pollutants	Emission Factor (lb/MMscf)[1]	GWP	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
CO_2	120000	1	420.00	1,839.60
CH_4	2.3	21	0.01	0.04
N_2O	2.2	310	0.01	0.03
CO_2e[2]			422.56	1,850.80

1. Emission factor obtained from AP-42 Chapter 1, Section 4, Table 1.4-2 (7/98).
2. Carbon Dioxide equivalent (CO_2e) emissions are calculated by multiplying mass emissions by each pollutant's global warming potential (GWP).

Example Calculations (CO_2 emissions):

$$\frac{3.500\ \text{MMBtu}}{\text{hr}} \left| \frac{1E+05\ \text{lb}}{\text{MMscf}} \right| \frac{1\ \text{MMscf}}{1000\ \text{MMBtu}} = 420.00\ \frac{\text{lb}}{\text{hr}}$$

$$\frac{420.00\ \text{lb}}{\text{hr}} \left| \frac{8760\ \text{hr}}{\text{year}} \right| \frac{1\ \text{lb}}{2000\ \text{ton}} = 1{,}839.60\ \frac{\text{ton}}{\text{year}}$$

Example Calculations (CO_2e emissions):

$$\frac{420.00\ \text{lb}\ CO_2}{\text{hr}} \left| \frac{1\ \text{GWP}}{\text{lb}\ CO_2} \right| = 420.00\ \text{lbs}\ CO_2\text{e/hr}$$

$$\frac{0.01\ \text{lb}\ CH_4}{\text{hr}} \left| \frac{21\ \text{GWP}}{\text{lb}\ CH_4} \right| = 0.17\ \text{lbs}\ CO_2\text{e/hr}$$

$$\frac{0.01\ \text{lb}\ N_2O}{\text{hr}} \left| \frac{310\ \text{GWP}}{\text{lb}\ N_2O} \right| = 2.39\ \text{lbs}\ CO_2\text{e/hr}$$

Total: 422.56 lbs CO_2e/hr

$$\frac{422.56\ \text{lb}\ CO_2\text{e}}{\text{hr}} \left| \frac{8760\ \text{hr}}{\text{year}} \right| \frac{1\ \text{lb}}{2000\ \text{ton}} = 1{,}850.80\ \text{tpy}$$

East Balt Commissary, Inc.
East Balt Bakery - Chicago, IL
Griddle (with Oven) Potential to Emit

Griddle (with Oven) Natural Gas HAP Pollutant Emissions

Pollutant	CAS	Emission Factors (lb/MMscf)[1]	Hourly Emissions (lbs/hr)	Annual Emissions (tpy)
Lead[2]	7439-92-1	5.00E-04	1.75E-06	7.67E-06
2-Methylnapthalene	91-57-6	2.40E-05	8.40E-08	3.68E-07
3-Methylchloranthrene	56-49-5	1.80E-06	6.30E-09	2.76E-08
7-12-	57-97-6	1.60E-05	5.60E-08	2.45E-07
Acenaphthene	83-32-9	1.80E-06	6.30E-09	2.76E-08
Acenaphthylene	203-96-8	1.80E-06	6.30E-09	2.76E-08
Anthracene	120-12-7	2.40E-06	8.40E-09	3.68E-08
Benz(a)anthracene	56-55-3	1.80E-06	6.30E-09	2.76E-08
Benzene	71-43-2	2.10E-03	7.35E-06	3.22E-05
Benzo(a)pyrene	50-32-8	1.20E-06	4.20E-09	1.84E-08
Benzo(b)fluoranthene	205-99-2	1.80E-06	6.30E-09	2.76E-08
Benzo(g,h,i)perylene	191-24-2	1.20E-06	4.20E-09	1.84E-08
Benzo(k)fluoranthene	205-82-3	1.80E-06	6.30E-09	2.76E-08
Chrysene	218-01-9	1.80E-06	6.30E-09	2.76E-08
Dibenzo(a,h)anthracene	53-70-3	1.20E-06	4.20E-09	1.84E-08
Dichlorobenzene	25321-22-6	1.20E-03	4.20E-06	1.84E-05
Fluoranthene	206-44-0	3.00E-06	1.05E-08	4.60E-08
Fluorene	86-73-7	2.80E-06	9.80E-09	4.29E-08
Formaldehyde	50-00-0	7.50E-02	2.63E-04	1.15E-03
Hexane	110-54-3	1.80E+00	6.30E-03	2.76E-02
Indeno(1,2,3-cd)pyrene	193-39-5	1.80E-06	6.30E-09	2.76E-08
Naphthalene	91-20-3	6.10E-04	2.14E-06	9.35E-06
Phenanathrene	85-01-8	1.70E-05	5.95E-08	2.61E-07
Pyrene	129-00-0	5.00E-06	1.75E-08	7.67E-08
Toluene	108-88-3	3.40E-03	1.19E-05	5.21E-05
Arsenic	7784-42-1	2.00E-04	7.00E-07	3.07E-06
Beryllium	7440-41-7	1.20E-05	4.20E-08	1.84E-07
Cadmium	7440-43-9	1.10E-03	3.85E-06	1.69E-05
Chromium	7440-47-3	1.40E-03	4.90E-06	2.15E-05
Cobalt	7440-48-4	8.40E-05	2.94E-07	1.29E-06
Manganese	7439-96-5	3.80E-04	1.33E-06	5.83E-06
Mercury	7439-97-6	2.60E-04	9.10E-07	3.99E-06
Nickel	7440-02-0	2.10E-03	7.35E-06	3.22E-05
Selenium	7782-49-2	2.40E-05	8.40E-08	3.68E-07
Total POM		8.52E-05	2.98E-07	1.31E-06
Total HAP		**1.89E+00**	**6.61E-03**	**2.89E-02**
Maximum Individual HAP (hexane)		**1.80E+00**	**6.30E-03**	**2.76E-02**

1. Emission factor obtained from AP-42 Chapter 1, Section 4, Table 1.4-3 and 1.4-4 (7/98).
2. Emission factor obtained from AP-42 Chapter 1, Section 4, Table 1.4-2 (7/98).

East Balt Commissary, Inc.
East Balt Bakery - Chicago, IL
Griddle (with Oven) Potential to Emit

Example Calculations (Hexane emissions):

$$\frac{3.500\ \text{MMBtu}}{\text{hr}} \left| \frac{1.80\ \text{lb}}{\text{MMscf}} \right| \frac{1\ \text{MMscf}}{1000\ \text{MMBtu}} = 0.01\ \frac{\text{lb}}{\text{hr}}$$

$$\frac{0.01\ \text{lb}}{\text{hr}} \left| \frac{8760\ \text{hr}}{\text{year}} \right| \frac{1\ \text{lb}}{2000\ \text{ton}} = 0.03\ \frac{\text{ton}}{\text{year}}$$

East Balt Commissary, Inc.
East Balt Bakery - Chicago, IL
Griddle (with Oven) Potential to Emit

Griddle (with Oven) Ethanol (VOM) Baking Emissions

Pollutants	Emission Factor (lb/ton baked bread)[1]	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
VOM	4.404	6.17	27.01

1. Emission factor obtained from June 7-9, 2011 USEPA Method 25A Stack Test.

Example Calculations (Ethanol - VOM emissions):

$$\frac{12264.000 \text{ tons bread}}{\text{year}} \Big| \frac{4.404 \text{ lb}}{\text{ton bread}} \Big| \frac{1 \text{ year}}{8760 \text{ hr}} \Big| = 6.17 \frac{\text{lb}}{\text{hr}}$$

$$\frac{6.17 \text{ lb}}{\text{hr}} \Big| \frac{8760 \text{ hr}}{\text{year}} \Big| \frac{1 \text{ lb}}{2000 \text{ ton}} \Big| = 27.01 \frac{\text{ton}}{\text{year}}$$

Griddle (with Oven) Total Emissions

Pollutants	Uncontrolled	
	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
	Criteria Pollutant Emissions	
NO_X[2]	0.35	1.53
CO[2]	0.07	0.32
SO_X	0.00	0.01
PM	0.03	0.12
VOM	6.20	27.17
	Greenhouse Gas Emissions	
CO_2	420.00	1,839.60
CH_4	0.01	0.04
N_2O	0.01	0.03
CO_2e	422.56	1,850.80
	HAP Emissions	
Total HAP	6.61E-03	0.03
Maximum Individual HAP (hexane)	6.30E-03	0.03

ATTACHMENT C

Lowest Achievable Emission Rate (LAER) Analysis

LOWEST ACHIEVABLE EMISSION RATE (LAER) ANALYSIS

East Balt Commissary, LLC > Chicago, Illinois

east balt

Prepared By:

TRINITY CONSULTANTS
1S660 Midwest Road
Suite 250
Oakbrook Terrace, IL 60181
(630) 495-1470

November 2013

Project 131401.0127

Trinity Consultants

Environmental solutions delivered uncommonly well

TABLE OF CONTENTS

LIST OF FIGURES

1. INTRODUCTION

1.1. OVERVIEW

East Balt Commissary, LLC (East Balt) operates an existing bakery that produces yeast leavened products on three (3) specially configured manufacturing lines located at 1801 West 31st Place in Chicago, Illinois (Chicago facility). The Chicago facility currently operates under Clean Air Act Permit Program (CAAPP) Permit No. 031600FYB, issued by the Illinois Environmental Protection Agency (IEPA) on August 30, 2004, and produces breads, buns, and miscellaneous bakery products. Significant emission units at the source include two (2) bakery lines, each with an oven, identified as emission unit 01 and 02, respectively, and a griddle with an oven, identified as emission unit 03. Additional insignificant activities, including, but not limited to, natural gas-fired boilers, heaters, storage silos, and a flour unloading system are also included in the current CAAPP. The Chicago facility is considered to be a major source of volatile organic material (VOM) emissions with a source-wide VOM emission limit of 200 tons per year (tpy).

The bakery lines are used to produce a variety of baked goods. This bakery production is a highly automated process where all the mixing, blending, working and dividing are interconnected by conveyor throughout the process. Bread and bread products consist of four main ingredients: flour, water, yeast and salt. Other physical properties of the product are obtained by adding ingredients such as sweeteners, shortening, enzymes, and preservatives. Flour, the main ingredient, is stored in silos and is conveyed through pipes to batch weighers, after which water, yeast, and other ingredients are added in a mixer.

After mixing, the dough is placed in large wheeled tubs and kept in a room where the temperature and humidity are closely controlled to allow the fermentation process to occur. During this process, the yeast reproduces under aerobic conditions forming carbon dioxide gas (49 percent), an almost equivalent amount of liquid ethanol (47 percent) and about 4 percent of other various compounds. With some recipes, additional ingredients including yeast and flour are added to process after fermentation. In these cases, the initial mix is called a 'sponge,' with the extra ingredients referred to as a 'spike' and the final mixed product called 'dough.'

After fermentation, the dough is placed in a mixer where the minor ingredients are added. The dough is then conveyed through a divider and rounded, dusted with flour, and placed into pans. The pans are conveyed into a proof box. The proof box is a well-insulated chamber, free of drafts where the time, temperature, and humidity are controlled. These conditions allow the dough to rise again by accelerating the yeast activity. A minor amount of the ethanol is liberated in the proof boxes; however, the exhausts from these chambers are minimized to preserve temperature and humidity conditions, and ethanol (VOM) emissions are considered insignificant. After proofing, the pans are conveyed into baking ovens. The ovens combust natural gas exclusively, with a firing rate that exceeds 0.3 million British thermal units per hour (MMBtu/hr), but is less than 10 MMBtu/hr. During the baking process, the yeast suffers a thermal death, and no further gases are created. Approximately 50 percent of the liquid ethanol produced during fermentation is vaporized during the baking process. The baking process is complete when the internal temperature of the loaf reaches the boiling point of ethanol. After baking, the loaf is removed from the pan and is allowed to cool prior to packaging. Bakery line #1 was installed and began operation in 1978, and the oven of Bakery Line #1 was replaced in February 1995. Bakery line #2 with oven was installed and started operation in 1967. Griddle with oven was installed and started operation in 1977.

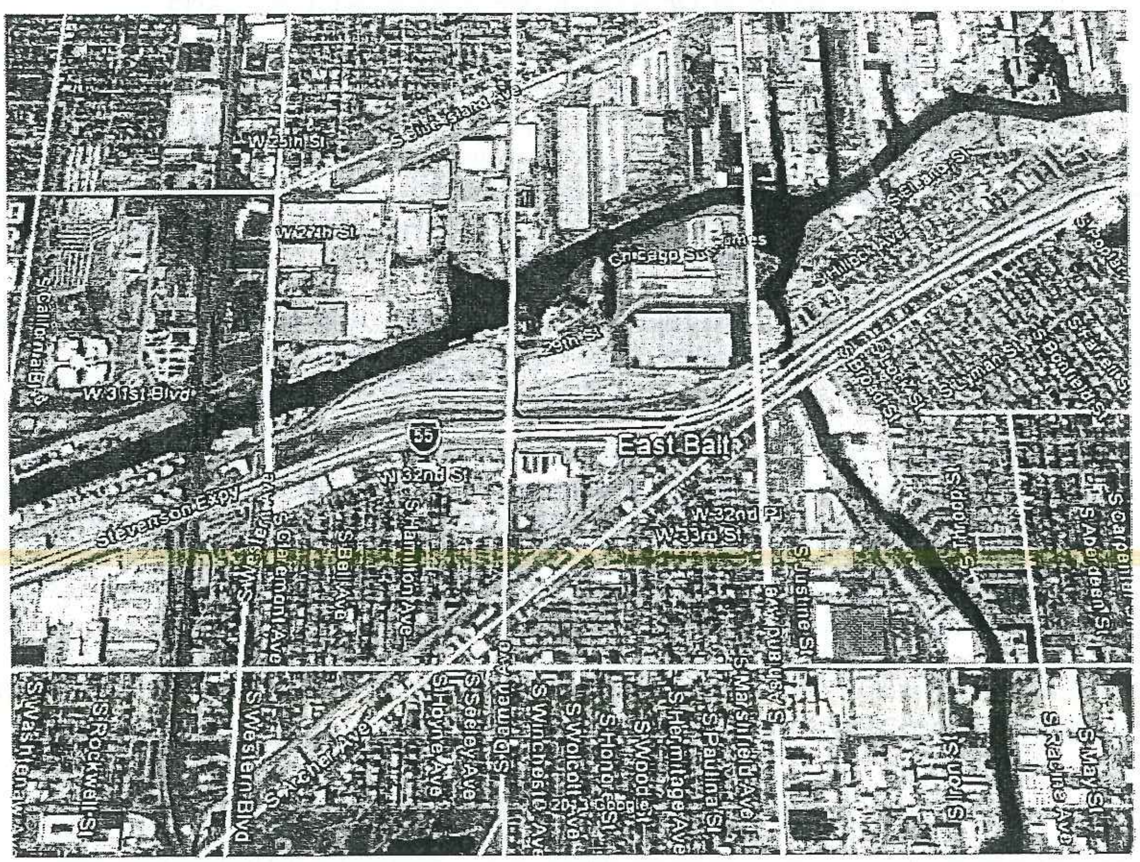
In response to recent performance testing conducted at the Chicago facility, as requested in a Section 114 letter from the United States Environmental Protection Agency (USEPA), East Balt intends to enter into a Consent Decree agreement with the USEPA and the IEPA regarding alleged violations of the Clean Air Act (CAA). East Balt recognizes that the Consent Decree allege will that the Chicago facility should have triggered Major Source

Non-Attainment New Source Review (NANSR) for VOM emissions during the installation of the new Bakery Line #1 oven in 1995 based on the VOM emission rate obtained during performance testing conducted on September 20 and 21, 2011. As required under Major Source NANSR regulations, East Balt must obtain a construction permit prior to installing a control device to limit VOM emissions from Bakery Line #1. These regulations require the application to contain a demonstration that the control technology to be used to control VOM emissions meets the standard of the Lowest Achievable Emissions Rate (LAER) as well as an Alternatives Analysis to demonstrate why the facility must be located in the non-attainment area. It is important to note that East Balt is voluntarily installing LAER-compliant VOM emission controls on Bakery Line #2 in addition to Bakery Line #1. East Balt anticipates the addition of the control device on Bakery Line #2 will serve as a supplemental environmental project (SEP) as part of the enforcement settlement with USEPA and IEPA.

1.2. FACILITY DESCRIPTION

The Chicago facility is located in Cook County, Illinois, which is considered to be in non-attainment with ozone and particulate matter with an aerodynamic diameter of less than 2.5 microns ($PM_{2.5}$). Figure 2-1 provides a map of the area surrounding the Chicago facility. The approximate central Universal Transverse Mercator (UTM) coordinates for the facility are 444,220 meters (m) East and 4,631,760 m North in UTM Zone 16 (NAD 83).

Figure 1-1. Area Map of the Chicago Facility



2. LOWEST ACHIEVEABLE EMISSION RATE (LAER) ANAYSIS

Cook County, Illinois, is classified as a marginal non-attainment area for ozone (under the 2008 8-hour standard). Therefore emissions of VOM, a precursor to ozone, are subject to NANSR, pursuant to 35 Illinois Administrative Code (IAC) 203, Subpart B. Emissions of nitrogen oxides (NO_X) are not subject to NANSR for this project because emission levels are below the significant emission rate (SER) of 40 tpy. In a marginal non-attainment area for ozone, a source is considered a major source if it has a potential to emit VOM and/or NO_X at a rate of 100 tpy or greater, as defined in 35 IAC 203.206(b)(1)(A) and (b)(3)(A). As a major source of VOM, East Balt is required to implement LAER for VOM. LAER is defined in 35 IAC 203.301(a) as "the more stringent rate of emissions" based on the following:

- "The most stringent emissions limitation which is contained in the implementation plan of any State for such class or category of stationary source, unless the owner or operator of the proposed stationary source demonstrates that such limitations are not achievable;"

USEPA maintains the RACT/BACT/LAER Clearinghouse (RBLC) database, containing permit limit and control technology standard information provided by state and local permitting agencies and regulatory emission limits and control technology standards promulgated by USEPA. This database is referenced to determine LAER for the control of VOM emissions from bakery ovens.

2.1. REVIEW OF STATE IMPLEMENTATION PLANS

The primary sources of VOM emissions at the Chicago facility are from Bakery Line #1 with oven and Bakery Line #2 with oven. In order to evaluate LAER for the bakery line ovens, East Balt first reviewed the most stringent State Implementation Plan (SIP) limits for this source category. The most stringent SIP limits identified from this review are established by the South Coast Air Quality Management District (SCAQMD), the Bay Area Air Quality Management District (BAAQMD), and the Texas Council on Environmental Quality (TCEQ). The SCAQMD, BAAQMD, and TCEQ regulate the worst ozone non-attainment areas in the United States; the SIP of these regulatory bodies are thus considered to be the most stringent.

The SCAQMD's Regulation 11, Rule 1153 establishes requirements for commercial baking ovens greater than 2.0 MMBtu/hr and with average daily emissions greater than 50 pounds of VOM. The most stringent requirement, which applies to new ovens (i.e., post-1990), is to reduce VOM emissions by 95 percent by weight.

The BAAQMD's Regulation 8, Rule 42 establishes requirements for large commercial baking ovens. All new and modified ovens and some existing ovens at large commercial bread bakeries (i.e., those producing more than 100,000 pounds of breads, buns, and rolls per day) are required to vent all emissions to an approved emission control system capable of reducing emissions of precursor organic compounds by 90 percent on a mass basis. Exemptions are included for low emitting (i.e., emitting less than 150 lb/day of ethanol) and some existing (i.e., pre-1998 and with emissions less than 250 pounds of ethanol per day) ovens.

The Texas Administrative Code (TAC) does not contain regulations establishing emissions or emissions control requirements for commercial bakeries.

2.2. POTENTIAL VOM CONTROL TECHNOLOGIES

A list of potential VOM control technologies for the bakery ovens is provided in the following sections.

2.2.1. Thermal Oxidizer

Thermal oxidation is the process of oxidizing organic contaminants in a waste gas stream by raising the temperature above the auto-ignition point in the presence of oxygen for sufficient time to completely oxidize the organic contaminants to carbon dioxide and water. The residence time, temperature, flow velocity and mixing, and the oxygen concentration in the combustion chamber affect the oxidation rate and destruction efficiency. Thermal oxidizers typically require combustion of an auxiliary fuel (e.g., natural gas) to maintain combustion chamber temperatures high enough to completely oxidize the contaminant gases. Thermal oxidizers are typically designed to have a residence time of one second or less and combustion chamber temperatures between 1,200 and 2,000°F.[1]

The three types of thermal oxidation systems include direct flame, recuperative, and regenerative thermal oxidizers, which are differentiated by the type of heat recovery equipment used. A direct flame thermal oxidizer consists of only a combustion chamber with no heat recovery equipment. In a recuperative thermal oxidizer, the waste gas stream is preheated using the heat content of the treated gas stream, typically using a shell and tube or plate heat exchanger, resulting in improved oxidizer efficiency and significant fuel cost savings. In a regenerative thermal oxidizer, a high-density media such as a packed ceramic bed, which was heated in a previous cycle, is used to preheat the incoming waste gas stream, resulting in improved oxidizer efficiency and significant fuel cost savings. In general, thermal oxidizers are less efficient at treating waste gas streams with highly variable flow rates since the variable flow rate results in varying residence times, combustion chamber temperature, and poor mixing. VOM destruction efficiencies greater than 98 percent are achievable under certain operating conditions. A VOM destruction efficiency of 95 percent is achievable on a consistent basis under normal operational conditions for a typical bakery operation.[2,3,4]

2.2.2. Catalytic Oxidizer

Catalytic oxidation allows oxidation to take place at a faster rate and at a lower temperature than is possible with thermal oxidation. The oxidation is facilitated by the presence of the catalyst and carried out by the same basic chemical reaction as thermal oxidation.[5] VOM destruction efficiencies greater than 98 percent are achievable under certain operating conditions. A VOM destruction efficiency of 95 percent or a VOM outlet concentration of 10 ppmv or less is achievable on a consistent basis under normal operational conditions for a typical bread baking operation.[6]

2.2.3. Wet Packed Bed Scrubber

A wet packed bed scrubber is an absorption system in which a waste gas stream interacts with a scrubbing liquid, most commonly water, inside a contact chamber containing a bed of packing media in order to strip contaminant gases from the waste gas stream. A VOM destruction efficiency of 95 percent is achievable on a consistent basis under normal operational conditions for a typical bakery operation.[7]

---

[1] U.S. EPA. *Air Pollution Control Technology Fact Sheet (Thermal Incinerator)*, EPA-452/F-03-022.
[2] U.S. EPA. *Air Pollution Control Technology Fact Sheet (Thermal Incinerator)*, EPA-452/F-03-022.
[3] U.S. EPA. *Air Pollution Control Technology Fact Sheet (Regenerative Incinerator)*, EPA-452/F-03-021.
[4] Technical Support Document, Appendix B for IDEM Significant Permit Modification No. 163-31955-00040.
[5] U.S. EPA. *Air Pollution Control Technology Fact Sheet (Catalytic Incinerator)*, EPA-452/F-03-018.
[6] Technical Support Document, Appendix B for IDEM Significant Permit Modification No. 163-31955-00040.
[7] U.S. EPA. *Alternative Control Technology Document for Bakery Ovens*, EPA-453/r-92-017.

2.2.4. Carbon Adsorption

Carbon adsorption technology utilizes a porous solid to selectively collect VOM from the gas stream. Adsorption collects VOM, but does not destroy it.[8] Carbon adsorption is not well suited for use in bakery ovens because ethanol, the primary organic gas in the oven exhaust, has a high affinity for carbon and is difficult to strip from the carbon beds. Incomplete stripping lowers the bed's capacity and reduces abatement efficiency. In addition, fats and oils can clog the porous solid, reducing capacity and bed life.[9] Therefore, this control technology is not considered to be technically feasible for use in food industry ovens.

2.2.5. Biofiltration

Biofiltration is a process in which a waste gas stream is passed through a bed of peat, compost, bark, soil, gravel, or other inorganic media in order to strip organic contaminant gases from the waste gas stream through the process of dissolution in the bed moisture and adsorption to the bed media. Under aerobic conditions, microorganisms naturally present in the bed oxidize the organic contaminant gases to carbon dioxide, water, and additional biomass. If the temperature of the waste gas stream is too high, the gas stream must be cooled to an optimum temperature before it can be treated in the biofilter in order to maintain the viability of the microorganisms. In addition, the bed must be monitored and maintained at an optimum moisture content and pH in order to prevent cracking of the bed media and to maintain the viability of the microorganisms.[10]

Based on a typical bread oven operating temperature of 430 to 460 degrees Fahrenheit in the final baking zone, the temperature of the exhaust from the oven would exceed the required range for the viability of mesophilic bacteria. Additionally, the wastewater and fats condensation associated with cooling strategies are significant, and sufficient space for the required soil beds is unavailable at many bakeries in the United States.[11] Therefore, this control technology is not considered to be technically feasible for use in food industry ovens.

2.2.6. Refrigerated Condensers

Condensation is the process by which the temperature of the waste gas stream is lowered to below the dew points of the contaminants gases in waste gas. A refrigeration condenser normally provides VOM control efficiency greater than 90 percent. However, the low concentration of VOM and the high flow rate, temperature, and moisture content of the oven exhaust would adversely impact the control efficiency for a baking oven. In addition, fats and oils contained in the exhaust would reduce the control efficiency of the condenser and create sanitation concerns.[12] Therefore, this control technology is not considered to be technically feasible for use in food industry ovens.

2.2.7. Good Combustion Practices

As stated above, emissions of VOM from the bakery line ovens are a result of liquid ethanol present in the dough. The raw materials used in the production of the baked goods will not be altered; however good combustion practices may be used to minimize products of incomplete combustion from the fuel.

---

[8] U.S. EPA. *Choosing an Adsorption System for VOC: Carbon, Zeolite, or Polymers?* EPA-456/F-99-004.
[9] U.S. EPA. *Alternative Control Technology Document for Bakery Ovens*, EPA-453/r-92-017.
[10] U.S. EPA. *Alternative Control Technology Document for Bakery Ovens*, EPA-453/r-92-017.
[11] U.S. EPA. *Alternative Control Technology Document for Bakery Ovens*, EPA-453/r-92-017.
[12] U.S. EPA. *Alternative Control Technology Document for Bakery Ovens*, EPA-453/r-92-017.

2.3. SELECTION OF LAER

Based on the control technology review in Section 2.2, technically feasible control technologies for the control of VOM emissions from bakery ovens include a thermal oxidizer, catalytic oxidizer, wet packed bed scrubber, and good combustion practices. The highest VOM destruction efficiency achievable on a consistent basis under normal operational conditions for a typical bakery line oven for any of these control technologies, excluding good combustion practices, is 95 percent.

A review of sources permitted from 1995 to 2013 and identified under the process code 70.550 (Bakeries and Snack Foods) in the RBLC indicates that in practice the highest demonstrated control efficiency for the control of VOM emissions from bakery ovens is 95 percent, consistent with the most stringent SIP requirements for commercial bakery ovens (i.e., SCAQMD Regulation 11, Rule 1153). The results of the RBLC search are included in Appendix B.

East Balt is proposing a LAER VOM emission limit of 1.29 tpy and 10 parts per million by volume (ppmv) by utilizing a catalytic oxidizer with a 98 percent control efficiency. This proposed emission limit is more stringent than any current BACT/LAER limits or SIP requirements for commercial bakery ovens. In addition, East Balt, as part of a supplemental environmental program, will voluntarily control VOM emissions from Bakery Line #2 oven using the proposed catalytic oxidizer.

3. ALTERNATIVES ANALYSIS

The NANSR regulations of 35 IAC 203.306 requires major modifications to a source of a non-attainment pollutant to perform an analysis of alternatives to the proposed project. In accordance with this regulation, East Balt must:

> *"demonstrate that benefits of the new major source or major modification significantly outweigh the environmental and social costs imposed as a result of its location, construction, or modification, based upon an analysis of alternative sites, sizes, production processes and environmental control techniques for such proposed source."*

To meet this requirement, East Balt has investigated the possibility of relocating the source to a site outside the Metropolitan Chicago nonattainment area, using a different method of manufacturing the baked goods, and utilizing different control methods than what has been proposed in this application. After careful examination, East Balt has concluded that the major modification including the replacement of the Baking Line #1 oven at the Chicago facility has a greater environmental and social benefit than any of these other alternatives.

3.1. ALTERNATIVE SITES

East Balt's facility has already been constructed, at a site chosen within the center of its customer service area. It could not serve this customer base at a site located outside of the Chicago nonattainment area, due to excessive transportations costs that would be required to deliver products to customers who are almost exclusively located with the Chicago nonattainment area. In addition to being economically infeasible to locate outside of the Chicago nonattainment area, doing so – even if it were economically possible – would result increased air pollution from the increased mileage required to transport products. For all of these reasons, no alternative site has been or should be considered.

RBLC TABLES

Table 1. Line 1 Oven RBLC & Permit Search Results - VOC

RBLC ID	Facility/Company	State	Permit Date	Process Type	Control Type	Limit 1	Units	Efficiency	Notes
CA-0468	Certified Grocers Of California Ltd.	CA	09/14/1990	Oven, Bakery	Catalytic Afterburner	58	lb/day	95%	
VA-0110	Automatic Rolls Of Virginia, Inc.	VA	02/19/1988	Oven	Permit Condition, Stack Test	13.8	lb/day	0%	VOC control waived based on the absence of existing examples of VOC controls of bread baking ovens, except for one test installation, and on unreasonable costs.

Table 1. Line 1 Oven RBLC Search Results - VOC

RBLC ID	Facility/Company	State	Permit Date	Process Type	Control Type	Limit 1	Units	Efficiency	Limit 2	Units	Avg. Period	Notes
IN-0120	Allen Foods, Inc.	IN	07/13/2006	Bread Oven	Catalytic Oxidizer	95	% overall control	95%	10	ppmv	-	
IN-0124	Allen Foods, Inc.	IN	03/30/2012	Bread Line Oven	Catalytic Oxidizer	95	% efficiency	95%	10	ppmv	3 hrs	
IN-0124	Allen Foods, Inc.	IN	03/30/2012	English Muffin Lines	Catalytic Oxidizer	95	% efficiency	95%	10	ppmv	3 hrs	
IN-0128	White Castle System, Inc.	IN	10/14/2011	Bread Baking Line	Catalytic Oxidizer	95	% efficiency	95%	10	ppmv	3 hrs	
IN-0132	Alpha Baking Co., Inc.	IN	08/09/2011	Bread Baking Operation	Catalytic Oxidizers For Natural Gas Fired Oven	95	% efficiency	95%	10	ppmv	3 hrs	
IN-0132	Alpha Baking Co., Inc.	IN	08/09/2011	Bun Baking Line	Catalytic Oxidizers For Natural Gas Fired Oven	95	% efficiency	95%	10	ppmv	3 hrs	
IN-0132	Alpha Baking Co., Inc.	IN	08/09/2011	Baking Line	Catalytic Oxidizers For Natural Gas Oven	95	% efficiency	95%	10	ppmv	3 hrs	
IN-0134	Maplehurst Bakeries, Inc.	IN	05/25/2012	Donut Production Line	Work Practice Standards	40	tpy	0%	-	-	-	
IN-0134	Maplehurst Bakeries, Inc.	IN	05/25/2012	Donut Production Line	Work Practice Standards	61	tpy	0%	-	-	-	
IN-0148	Hartford Bakery, Inc.	IN	09/07/2012	Bun Production Line	Work Practice Standards	47	tpy	0%	-	-	-	
AZ-0029	Holsum Bakery, Inc.	AZ	03/01/1996	Oven	Quencher/Scrubber	50	tpy	81%	-	-	-	
CA-0854	Maple Leaf Bakery	CA	10/06/1998	Ovens, Bakery, Four With 9 Process Stacks Total	Anguil Model 75 To Catalytic Oxidizer	92	% efficiency	92%	600	Degree F	Oxidizer Temp. (Roc)	
CA-0859	Freund Baking Company	CA	07/16/1997	Oven, Bakery, Baker Equipment	Catalytic Oxidizer	95	% efficiency	95%	-	-	-	
TN-0111	Proctor And Gamble Manufacturing Company	TN	03/19/1998	Dryer On Snack Making Line	Exclusive Use Of Natural Gas	0.04	lb/hr	0%	-	-	-	